

**Administrative Rules of the Department of Environmental Quality
Incorporated by Reference into
Preliminary Draft Rule Docket No. 58-0117-1001
Rules for the Reclamation and Reuse of Municipal and Industrial Wastewater**

58.01.08, "Idaho Rules for Public Drinking Water Systems," Sections 542 and 543, as codified in the 2009 Idaho Administrative Code

IDAPA 58.01.16, "Wastewater Rules," Sections 400, 401, 409, 411, 430, 440, 441, 455 and 493, as codified in the 2009 Idaho Administrative Code

open to atmospheric pressure, (3-30-07)

ii. Where a break tank is provided, have an air gap of at least six (6) inches or two (2) pipe diameters, whichever is greater, between the feeder line and the flood rim of the tank. (3-30-07)

e. Pumps, their prime movers, and accessories shall be controlled in such a manner that they will operate at rated capacity without dangerous overload. Where two (2) or more pumps are installed, provision shall be made for alternation. Provision shall be made to prevent energizing the motor in the event of a backspin cycle. Equipment shall be provided or other arrangements made to prevent surge pressures from activating controls which switch on pumps or activate other equipment outside the normal design cycle of operation. (3-30-07)

04. **Booster Pumps.** In addition to other applicable requirements in Section 541, booster pumps must comply with the following: (3-30-07)

a. In-line booster pumps shall maintain an operating pressure that is consistent with the requirements specified in Subsection 552.01, and shall be supplied with an automatic cutoff when intake pressure is less than or equal to five (5) psi. (3-30-07)

b. Booster pumps with a suction line directly connected to any storage reservoirs shall be protected by an automatic cutoff to prevent pump damage and avoid excessive reservoir drawdown. (3-30-07)

c. Each booster pumping station shall contain not less than two (2) pumps with capacities such that peak hour demand, or a minimum of the maximum day demand plus equalization storage, can be satisfied with any pump out of service. See Subsection 501.18 for general design requirements concerning fire flow capacity. (5-8-09)

542. FACILITY AND DESIGN STANDARDS - DISTRIBUTION SYSTEM.

01. **Protection from Contamination.** The distribution system shall be protected from contamination and be designed to prevent contamination by steam condensate or cooling water from engine jackets or other heat exchange devices. (3-30-07)

02. **Installation of Water Mains.** Division 400 of "Idaho Standards for Public Works Construction," referenced in Subsection 002.02, may be used as guidance for installation of water mains. In addition, the following provisions shall apply: (3-30-07)

a. Installed pipe shall be pressure tested and leakage tested in accordance with the applicable AWWA Standards, incorporated by reference into these rules at Subsection 002.01. (3-30-07)

b. New, cleaned, and repaired water mains shall be disinfected in accordance with AWWA Standard C651, incorporated by reference into these rules at Subsection 002.01. The specifications shall include detailed procedures for the adequate flushing, disinfection, and microbiological testing of all water mains. (3-30-07)

c. In areas where aggressive soil conditions are suspected or known to exist, analyses shall be performed to determine the actual aggressiveness of the soil. If soils are found to be aggressive, action shall be taken to protect metallic joint restraints and the water main, such as encasement in polyethylene, provision of cathodic protection, or use of corrosion resistant materials. (3-30-07)

d. The Department must approve any interconnection between potable water supplies, taking into account differences in water quality between the two systems. (3-30-07)

e. A continuous and uniform bedding shall be provided in the trench for all buried pipe. Backfill material shall be tamped in layers around the pipe and to a sufficient height above the pipe to adequately support and protect the pipe. Stones found in the trench shall be removed for a depth of at least six (6) inches below the bottom of the pipe. (3-30-07)

f. Water mains shall be covered with sufficient earth or other insulation to prevent freezing. (3-30-07)

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g. All tees, bends, plugs and hydrants shall be provided with reaction blocking, tie rods or joints designed to prevent movement. (3-30-07)

03. **Pressure Relief Valves.** All pumps connected directly to the distribution system shall be designed in conjunction with a water pressure relief valve of type, size, and material approved by the Department unless the Department approves another method that will prevent excessive pressure development. (3-30-07)

04. **Flow Meter Required.** All source pumps and booster pumps connected directly to the distribution system shall have an instantaneous and totalizing flow meter, installed in accordance with manufacture's specifications, unless deemed unnecessary by the Department in a particular application. The Department may require larger water systems to provide a means of automatically recording the total water pumped. (3-30-07)

05. **Pipe and Jointing Materials.** Pipe and jointing materials comply with the standards set forth in Subsection 501.01. Pipe shall be manufactured of materials resistant internally and externally to corrosion and not imparting tastes, odors, color, or any contaminant into the system. Where distribution systems are installed in areas of ground water contaminated by organic compounds: (3-30-07)

a. Pipe and joint materials which do not allow permeation of the organic compounds shall be used; and (4-11-06)

b. Non-permeable materials shall be used for all portions of the system including pipe, joint materials, hydrant leads, and service connections. (4-11-06)

06. **Size of Water Mains.** When fire hydrants are provided, they shall not be connected to water mains smaller than six (6) inches in diameter, and fire hydrants shall not be installed unless fireflow volumes are available. If fire flow is not provided, water mains shall be no less than three (3) inches in diameter. Any departure from this minimum standard shall be supported by hydraulic analysis and detailed projections of water use. (3-30-07)

07. **Separation of Potable and Non-Potable Pipelines.** The relation between potable and non-potable pipelines shall be as described in Subsections 542.07.a. through 542.07.c. The Department will use the Memorandum of Understanding with the Plumbing Bureau as guidance in determining the relative responsibilities for reviewing service lines. The conditions of Subsections 542.07.a. and 542.07.b. shall apply to all potable services constructed or reconstructed after April 15, 2007 and where the Department or the QLPE is the reviewing authority. (5-8-09)

a. Parallel installation requirements. (5-8-09)

i. Potable mains in relation to non-potable mains. (5-8-09)

(1) Greater than ten (10) feet separation: no additional requirements based on separation distance. (5-8-09)

(2) Ten (10) feet to six (6) feet separation: separate trenches, with potable main above non-potable main, and non-potable main constructed with potable water class pipe. (5-8-09)

(3) Less than six (6) feet separation: design engineer to submit data to the Department for review and approval showing that this installation will protect public health and the environment and non-potable main to be constructed of potable water class pipe. (4-11-06)

(4) Non-potable mains are prohibited from being located in the same trench as potable mains. (3-30-07)

(5) Pressure sewage mains shall be no closer horizontally than ten (10) feet from potable mains. (3-30-07)

ii. New potable services in relation to non-potable services, new potable services in relation to non-potable mains, and new non-potable services in relation to potable mains. (5-8-09)

(1) Greater than six (6) feet separation: no additional requirements based on separation distance.

(5-8-09)

(2) Less than six (6) feet separation: design engineer to submit data that this installation will protect public health and the environment and non-potable service constructed with potable water class pipe. (5-8-09)

(3) New potable services are prohibited from being located in the same trench as non-potable mains or non-potable services. (5-8-09)

b. Requirements for potable water mains or services crossing non-potable water mains or services. For the purposes of this section, the term "pipeline" applies to both mains and services. (5-8-09)

i. If there is eighteen (18) inches or more vertical separation with the potable water pipeline above the non-potable pipeline, then the non-potable pipeline joint must be as far as possible from the non-potable water pipeline. (5-8-09)

ii. If there is eighteen (18) inches or more vertical separation with the potable water pipeline below the non-potable pipeline, then the potable pipeline joint must be as far as possible from the non-potable pipeline, and the non-potable pipeline must be supported through the crossing to prevent settling. (5-8-09)

iii. Less than eighteen (18) inches vertical separation: (5-8-09)

(1) Potable pipeline joint to be as far as possible from the non-potable pipeline; and either: (5-8-09)

(a) Non-potable pipeline constructed with potable water class pipe for a minimum of ten (10) feet either side of potable pipeline with a single twenty (20) foot section of potable water class pipe centered on the crossing; or (5-8-09)

(b) Sleeve non-potable or potable pipeline with potable water class pipe for ten (10) feet either side of crossing. Use of hydraulic cementitious materials such as concrete, controlled density fill, and concrete slurry encasement is not allowed as a substitute for sleeving. (5-8-09)

(2) If potable pipeline is below non-potable pipeline, the non-potable pipeline must also be supported through the crossing to prevent settling. (5-8-09)

iv. Pressure sewage mains shall be no closer vertically than eighteen (18) inches from potable mains. (5-8-09)

c. Existing potable services in relation to new non-potable mains, existing non-potable services in relation to new potable mains, and existing potable services in relation to new non-potable services shall meet the requirements of Subsection 542.07.b., where practical, based on cost, construction factors, and public health significance. If the Department determines that there are significant health concerns with these services, such as where a large existing service serves an apartment building or a shopping center, then the design shall conform with Subsection 542.07.b. (5-8-09)

08. Separation from Subsurface Wastewater Systems and Other Sources of Contamination. A minimum horizontal distance of twenty-five (25) feet shall be maintained between any potable water pipe and a septic tank or subsurface wastewater disposal system. Guidance on separation from other potential sources of contamination, such as stormwater facilities, may be found at www.deq.idaho.gov/water/assist_business/engineers/checklists/guidance_separation_distances.pdf. (3-30-07)

09. Dead End Mains. All dead end water mains shall be equipped with a means of flushing and shall be flushed at least semiannually at a water velocity of two and one-half (2.5) feet per second. (3-30-07)

a. Dead ends shall be minimized by making appropriate tie-ins whenever practical in order to provide increased reliability of service and reduce head loss. (4-11-06)

b. No water main flushing device shall be directly connected to any sewer. (4-11-06)

10. **Repair of Leaks.** Leaking water mains shall be repaired or replaced upon discovery and disinfected in accordance with American Water Works Association (AWWA) Standards, incorporated by reference into these rules at Subsection 002.01. (3-30-07)
11. **Separation from Structures.** Water mains shall be separated by at least five (5) feet from buildings, industrial facilities, and other permanent structures. (3-30-07)
12. **Meter Vault Required.** All new public water systems shall include a meter vault at each service connection. A lockable shut-off valve shall be installed in the meter vault. This requirement shall also apply to extensions of the distribution system of existing public water systems. (3-30-07)
13. **Minimum Pressure at Building Sites.** Any public water system constructed or undergoing material modification where topographical relief may affect water pressure at the customers' premises shall provide the Department with an analysis which demonstrates that the pressure at each designated building site will be at least forty (40) psi, based on dynamic pressure in the main, as set forth in Subsections 552.01.b.i. and 552.01.b.ii., plus a static compensation from the elevation of the main to the elevation of each building site. (5-8-09)
- a. If forty (40) psi cannot be provided at each designated building site, the Department may require that reasonable effort be made to provide notification to existing and potential customers of the expected pressure. (5-3-03)
- b. The Department will not authorize a service connection at any designated building site where analysis indicates that pressure will be less than twenty (20) psi static pressure (or twenty-six point five (26.5) psi for two (2) story buildings). (5-3-03)
14. **Isolation Valves.** A sufficient number of valves shall be provided on water mains to minimize inconvenience and sanitary hazards during repairs. (3-30-07)
15. **Air Valves.** At high points in water mains where air can accumulate, provisions shall be made to remove the air by means of air release and vacuum relief valves or combination air release/vacuum relief valves. Air release valves, vacuum relief valves, or combination air release/vacuum relief valves may not be required if vacuum relief and air release functions in the pipeline can be adequately handled by approved appurtenances such as fire hydrants. (5-8-09)
- a. The open end of an air valve shall be extended to at least one (1) foot above grade and provided with a screened, downward-facing elbow. When the air vent on an air relief valve cannot be practically installed above ground, the vent may be below grade provided that the valve is manually operated and the air vent is extended to the top of the valve vault and provided with a screened, downward-facing elbow. In addition, for below ground vents, the valve vault must be rated for appropriate traffic loading in traffic areas and the vault drained to daylight or provided with adequate drainage to prevent flooding of the vault. (5-8-09)
- b. Discharge piping from air relief valves or combination air release/vacuum relief valves shall not connect directly to any storm drain, storm sewer, or sanitary sewer. (5-8-09)
16. **Backflow Protection.** Automatic air relief valves shall be equipped with a means of backflow protection. (3-30-07)
17. **Surface Water Crossings.** For the purposes of Subsection 542.17, surface water is defined as all surface accumulations of water, natural or artificial, public or private, or parts thereof which are wholly or partially within, which flow through or border upon the state. This includes, but is not limited to, rivers, streams, canals, ditches, lakes, and ponds. Surface water crossings, whether over or under water, shall be constructed as follows: (5-8-09)
- a. Above water crossings: the pipe shall be adequately supported and anchored, protected from damage and freezing, and shall be accessible for repair or replacement. (4-11-06)
- b. Under water crossings: A minimum cover of two (2) feet shall be provided over the pipe. When crossing a water course that is greater than fifteen (15) feet in width, the following shall be provided: (4-11-06)

- and
- i. The pipe shall be of special construction, having flexible, restrained, or welded water-tight joints; (4-11-06)
 - ii. Valves shall be provided at both ends of water crossings so that the section can be isolated for testing or repair; the valves shall be easily accessible and not subject to flooding; and (4-11-06)
 - iii. Permanent taps or other provisions to allow insertion of a small meter to determine leakage and obtain water samples shall be made on each side of the valve closest to the supply source. (4-11-06)

543. FACILITY AND DESIGN STANDARDS - CROSS CONNECTION CONTROL.

There shall be no connection between the distribution system and any pipes, pumps, hydrants, water loading stations, or tanks whereby unsafe water or other contaminating materials may be discharged or drawn into a public water system. The water purveyor is responsible through its cross connection control program to take reasonable and prudent measures to protect the water system against contamination and pollution from cross connections through premise isolation or containment, internal or in-plant isolation, fixture protection, or some combination of premise isolation, internal isolation, and fixture protection. (5-8-09)

01. Testable Assemblies. All double check valve backflow prevention assemblies, reduced pressure principle backflow prevention assemblies, spill resistant vacuum breakers, and pressure vacuum breakers used must pass a performance test conducted by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research. In addition all double check valve backflow prevention assemblies and reduced pressure principle backflow prevention assemblies used shall meet American Water Works Association (AWWA) Standards C-510 or C-511, incorporated by reference into these rules at Subsection 002.01, or an equivalent standard approved by the Department. (5-8-09)

02. Atmospheric Vacuum Breakers. All atmospheric vacuum breakers used shall be marked approved either by the International Association of Plumbing and Mechanical Officials (IAPMO) or by the American Society of Sanitation Engineers (ASSE). (5-8-09)

03. Resilient Seated Shutoff Valves. Resilient seated shutoff valves shall be used when double check valve backflow prevention assemblies, reduced pressure principle backflow prevention assemblies, and pressure vacuum breakers are installed. (3-30-07)

04. Assembly Selection. Appropriate and adequate backflow prevention assemblies for various facilities, fixtures, equipment, and uses of water must be selected either from the Pacific Northwest Cross Connection Control Manual, the Uniform Plumbing Code, the Environmental Protection Agency's Cross Connection Control Manual, the USC Manual of Cross Connection Control or other sources deemed acceptable by the Department. The selected assembly must comply with local ordinances. (5-8-09)

544. FACILITY AND DESIGN STANDARDS: GENERAL DESIGN OF FINISHED WATER STORAGE.

The materials and designs used for finished water storage structures shall provide stability and durability as well as protect the quality of the stored water. Finished water storage structures shall be designed to maintain water circulation and prevent water stagnation. Steel structures and facilities such as steel tanks, standpipes, reservoirs, and elevated tanks shall be designed and constructed in accordance with applicable AWWA Standards, incorporated by reference into these rules at Subsection 002.01. Other materials of construction are acceptable when properly designed to meet the requirements of Section 544. (5-8-09)

01. Sizing. Storage facilities shall have sufficient capacity, as determined from engineering studies that consider peak flows, fire flow capacity, and analysis of the need for various components of finished storage as defined under the term "Components of Finished Water Storage" in Section 003. The requirement for storage may be reduced when the source and treatment facilities have sufficient capacity with standby power to supply peak demands of the system. (3-30-07)

02. Location. Storage facilities shall be located in a manner that protects against contamination, ensures structural stability, protects against flooding, and provides year-round access by vehicles and equipment needed for repair and maintenance. (5-8-09)

two (2) licenses, one (1) for wastewater treatment and one (1) for collection, with the exception of a very small wastewater system for which the responsible charge operator may hold a single very small wastewater system license. Owners shall notify the Department in writing of any change of responsible charge or substitute responsible charge operator within thirty (30) days of such change. (4-1-09)T

02. Responsible Charge Operator License Requirement. An operator in responsible charge of a public wastewater system in Idaho must hold a valid license equal to or greater than the classification of the wastewater system(s), including each treatment system and each collection system or each very small wastewater system, as determined by the Department. (4-1-09)T

03. Substitute Responsible Charge Operator. At such times as the responsible charge operator is not available, a substitute responsible charge operator shall be designated to replace the responsible charge operator. (4-11-06)

04. Wastewater System Operator Licensure. All other operating personnel at public wastewater systems, including each treatment system and each collection system or each very small wastewater system, must hold a valid license issued by the Idaho Bureau of Occupational Licenses. (4-1-09)T

05. Wastewater System Operator Licensure Exceptions. (4-1-09)T

a. Any public wastewater system operating personnel that exclusively operate a Class A Effluent Distribution System of a Class A Municipal Reclaimed Wastewater System permitted in accordance with IDAPA 58.01.17, "Rules for the Reclamation and Reuse of Municipal and Industrial Wastewater," are not subject to operator licensure requirements as outlined in these rules. (4-1-09)T

b. Any non-pressurized drainfield and associated septic tank and collection system operating personnel are not subject to operator licensure requirements. (4-1-09)T

06. General Compliance Deadline. All public wastewater systems addressed in Sections 202 and 203 shall be in compliance with these rules by April 15, 2006. (4-11-06)

07. Land Application/Reuse Operator Compliance Deadline. Each public wastewater land application/reuse system addressed in these rules shall employ, retain or contract with licensed land application/reuse operating personnel by April 15, 2007. (3-30-07)

204. CONTRACTING FOR SERVICES.

Public wastewater systems may contract with properly licensed operating personnel to provide responsible charge operators and substitute responsible charge operators. Proof of such contract shall be submitted to the Department prior to the contracted operating personnel performing any services at the public wastewater system. (4-1-09)T

205. -- 259. (RESERVED).

260. SUBSURFACE SEWAGE OR WASTE DISPOSAL.

Subsurface sewage or wastewater disposal facilities must be designed and located so that pollutants cannot be reasonably expected to enter water of the state in concentrations resulting in injury to beneficial uses. See also IDAPA 58.01.03, "Individual/Subsurface Sewage Disposal Rules." (4-11-06)

261. -- 399. (RESERVED).

400. REVIEW OF PLANS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES.

Plans and specifications for municipal wastewater treatment or disposal facilities must comply with the facility and design standards set forth in Sections 410 through 599. If design issues are not addressed by the facility and design standards, then guidance documents, some of which are listed in Section 008, shall be used as guidance in the design and review of plans and specifications for municipal wastewater treatment or disposal facilities. See also Section 007. (3-30-07)

01. Ownership. Documentation of the ownership and responsibility for operating the proposed system shall be made available to the Department prior to or concurrent with the submittal of plans and specifications as required in Subsection 400.03. The documentation must show the financial arrangements adequate to demonstrate the ability for construction and operation and maintenance of the system according to these rules. Documentation shall also include the name of the wastewater system; the name, address, and phone number of the wastewater treatment facility; and the name, address, and phone number of the responsible charge operator. (5-8-09)

02. Connection to Existing System. If the proposed project is to be connected to an existing wastewater system, a letter from the existing system must be submitted to the Department stating that the existing system will be able to provide services to the proposed project. The Department may require further documentation showing the ability of the existing system to provide service to the new system. This letter must be submitted prior to or concurrent with the submittal of plans and specifications as required in Subsection 400.03. (5-8-09)

03. Plan and Specification Review. (4-11-06)

a. Except as provided in Subsection 400.03.b., all plans and specifications for the construction of new sewage systems, sewage treatment plants or systems, other municipal wastewater treatment or disposal facilities, or for material modifications to existing sewage treatment plants or systems, municipal wastewater treatment or disposal facilities shall be submitted to the Department for review and approval before construction may begin and all construction shall be in substantial compliance therewith. This does not include plan and specifications for facilities for sludge disposal, but does include plans and specifications for treatment or storage of sludge. If construction does not commence within twelve (12) months of the Department's final approval of plans and specifications, the Department may require resubmittal of all or part of the plans and specifications for review. The Department shall review plans and specifications and endeavor to resolve design issues within forty-two (42) calendar days of submittal such that approval can be granted. If the Department and applicant have not resolved design issues within forty-two (42) calendar days or at any time thereafter, the applicant may file a written demand to the Department for a decision. Upon receipt of such written demand, the Department shall deliver a written decision to the applicant within no more than seven (7) calendar days explaining any reasons for disapproval. The Department shall maintain records of all written demands for decision made pursuant to Subsection 400.03.a. with such records including the final decision rendered and the timeliness thereof. No material deviation shall be made to the approved plans and specifications without the prior approval of the Department. (5-8-09)

b. Plans developed for simple wastewater main extensions, when such facilities will be owned and operated by a city, county, quasi-municipal corporation or regulated public utility, shall not require preconstruction approval by the Department, provided that such plans and specifications are reviewed and approved by a QLPE to verify compliance with the requirements of these rules prior to initiation of construction. At the discretion of the city, county, quasi-municipal corporation or regulated public utility, the plans addressed by this subsection may be referred to the Department for review and approval prior to initiation of construction. The Department has the authority to review plans and specifications approved by a QLPE and can require modifications if the plans and specifications do not meet facility and design standards. Any plans and specifications approved pursuant to Subsection 400.03.b. shall be transmitted to the Department at the time construction is authorized and shall be marked or stamped as "Approved for Construction." Along with the plans and specifications, the transmittal must include the items listed in Subsections 400.03.b.i. through 400.03.b.vii. The plans and specifications must be sealed, signed, and dated by the professional engineer in responsible charge of their preparation, and the approval or transmittal letter must be sealed, signed, and dated by the QLPE that is approving the plans and specifications. (5-8-09)

i. A statement that the author of the transmittal letter is the QLPE representing the city, county, quasi-municipal corporation or regulated public entity. (5-8-09)

ii. A statement that the extension project complies with the current facility plan or preliminary engineering report, or a statement that the sewer system/treatment facility has adequate capacity. (5-8-09)

iii. A statement from the city, county, quasi-municipal corporation or regulated public entity or its authorized agent that the wastewater system owner will serve the project. (5-8-09)

iv. A statement from the city, county, quasi-municipal corporation or regulated public entity or its authorized agent that the wastewater system owner will own and operate the project after construction is complete.

(5-8-09)

- v. A statement by the QLPE that the plans and specifications are approved for construction. (5-8-09)
- vi. A statement by the QLPE that the plans and specifications comply with the facility standards within these rules. (5-8-09)
- vii. A statement recommending whether sanitary restrictions can be released or should remain in force. (5-8-09)
- c. Subsections 400.03.c.i. through 400.03.c.vi. outline the projects which QLPEs may approve and which QLPEs may not approve. (5-8-09)
 - i. A QLPE may approve plans and specifications for simple wastewater main extensions that will be able to discharge to an existing wastewater system owned by a city, county, quasi-municipal corporation, or regulated public utility at the time the extension is approved for construction by the QLPE. (5-8-09)
 - ii. A QLPE may approve plans for simple wastewater main extensions which will discharge to an existing wastewater system owned by a city, county, quasi-municipal corporation, or regulated public utility, but are unable to connect to the system at the time the extension is approved for construction by the QLPE, provided sanitary restrictions remain in force for the proposed extension. (5-8-09)
 - iii. A QLPE may not approve plans and specifications which include mechanical systems such as lift stations or treatment works. (5-8-09)
 - iv. A QLPE may not approve plans and specifications for projects which the QLPE was the design engineer or otherwise involved in the design. (5-8-09)
 - v. A QLPE employed by a city, county, quasi-municipal corporation, or regulated public utility may approve a design that was prepared by a subordinate engineer or an engineer from a separate design group within the city, county, quasi-municipal corporation, or regulated public utility. (5-8-09)
 - vi. A QLPE who is not employed by a city, county, quasi-municipal corporation, or regulated public utility, but is retained by a city, county, quasi-municipal corporation, or regulated public utility for the purpose of plan and specification review may not approve projects designed by the company with which the QLPE is employed. (5-8-09)

04. Professional Engineer. Plans and specifications for construction, alteration or expansion of any sewage system, sewage treatment plant or system, or other municipal wastewater treatment or disposal facility shall be prepared by or under the supervision of an Idaho licensed professional engineer and shall bear the imprint of the engineer's seal. Construction shall be observed by an Idaho licensed professional engineer or a person under the supervision of an Idaho licensed professional engineer. (3-30-07)

05. Record Plans and Specification. (5-8-09)

a. Within thirty (30) calendar days of the completion of construction of facilities covered by Subsection 400.03, record plans and specifications based on information provided by the construction contractor and field observations made by the engineer or the engineer's designee depicting the actual construction of facilities performed, must be submitted to the Director by the engineer representing the city, county, quasi-municipal corporation or regulated public utility that owns the project, or by the design engineer or owner-designated substitute engineer if the constructed facilities will not be owned and operated by a city, county, quasi-municipal corporation or regulated public utility. Such submittal by the engineer must confirm material compliance with the approved plans and specifications or disclose material deviations therefrom. If the construction does not materially deviate from the approved plans and specifications, the owner may have a statement to that effect prepared by an Idaho licensed professional engineer and filed with the Department in lieu of submitting a complete and accurate set of record drawings. (5-8-09)

b. Record plans and specifications, or a statement submitted in lieu of record plans and specifications, must be sealed, signed, and dated by the professional engineer in responsible charge of their preparation. (5-8-09)

06. Compliance With Applicable Standards and Rules. All plans and specifications submitted to satisfy the requirements of Sections 400 through 599 or approved in compliance with Sections 400 through 599, shall be in compliance with the requirements of these rules and shall conform in style and quality to regularly accepted engineering standards. The Department shall review plans and specifications to determine compliance with these rules and engineering standards of care. If the plans and specifications comply with these rules and engineering standards of care, the Department shall not substitute its judgment for that of the owner's design engineer concerning the manner of compliance with these rules. (3-30-07)

07. Waiver of Approval Requirement. The Department may waive the plan and specification approval for any particular facility or category of facilities which will have no significant impact on the environment or on the public health. (5-8-09)

08. Requirement to Have Approved Plans and Specifications and Approval Letter On-site During Construction. It is the responsibility of the owner to maintain one (1) copy of the approved plans and specifications and the approval letter from the reviewing authority on-site during construction at all times. (3-30-07)

09. Construction Inspection Requirement. Except as provided in Subsection 400.03.b., no construction shall commence until all of the necessary approvals have been received from the Department. The owner shall provide for the inspection of the construction of a municipal wastewater treatment or disposal facility by an Idaho licensed professional engineer to the extent required to confirm material compliance with the approved plans and to produce accurate record documents as required by Subsection 400.05. (5-8-09)

401. REVIEW OF PLANS FOR NONMUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES.

01. Plan and Specification Approval Required. The construction, alteration or expansion of any nonmunicipal wastewater treatment or disposal facility must not begin before plans and specifications for the proposed facility have been submitted to and approved by the Department. Deviations may be allowed as provided in Subsection 401.02. The Department does not require review of industrial in-plant processes. (4-11-06)

02. Deviations from Approved Plans. No material deviations are to be made from the approved plans and specifications without prior approval of the Department. (3-30-07)

03. Professional Engineer. Plans and specifications for construction, alteration or expansion of any nonmunicipal wastewater treatment or disposal facility shall be prepared by or under the supervision of an Idaho licensed professional engineer and shall bear the imprint of the engineer's seal. Construction shall be observed by an Idaho licensed professional engineer or a person under the supervision of an Idaho licensed professional engineer. (5-8-09)

04. Record Plans and Specifications. (5-8-09)

a. If actual construction deviates from the approved plans and specifications, complete and accurate plans and specifications depicting the actual construction, alteration, or modification performed, shall be submitted to the Department for review and approval within thirty (30) days of completion of construction. If the construction does not materially deviate from the approved plans and specifications, the owner may have a statement to that effect prepared by an Idaho licensed professional engineer and filed with the Department in lieu of submitting a complete and accurate set of record drawings. (5-8-09)

b. Record plans and specifications, or a statement submitted in lieu of record plans and specifications, must be sealed, signed, and dated by the professional engineer in responsible charge of their preparation. (5-8-09)

05. Waiver of Approval Requirement. The Department can waive the plan and specification approval required in Subsection 401.01 for any particular facility or category of facilities which will have no

significant impact on the environment or on the public health. (5-8-09)

06. Applicability of Standards. The facility and design standards for municipal wastewater treatment or disposal facilities set out in these rules do not apply to nonmunicipal wastewater treatment or disposal facilities covered under Section 401. (3-30-07)

402. PLAN AND SPECIFICATION REVIEW DISPUTE RESOLUTION.

The Department's plan and specification review dispute resolution policy is set out in PM05-2: Plan and Specification Review Dispute Resolution Advisory Panel for Engineering Disputes, http://www.deq.idaho.gov/rules/policies/pm05_2.cfm. (3-30-07)

403. -- 408. (RESERVED).

409. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES -- DEMONSTRATION OF TECHNICAL, FINANCIAL, AND MANAGERIAL CAPACITY.

No person shall proceed, or cause to proceed, with construction of a new public wastewater system, a new private municipal treatment plant, a new wastewater treatment facility, or a new privately owned wastewater pumping station until it has been demonstrated to the Department that the wastewater system will have adequate technical, financial, and managerial capacity, as defined in Section 010 of these rules. Demonstration of capacity shall be submitted to the Department prior to or concurrent with the submittal of plans and specifications, as required in Section 39-118, Idaho Code, and Subsection 400.03 of these rules. The Department shall issue in writing its approval of the new system capacity demonstration. (5-8-09)

01. Technical Capacity. In order to meet this requirement, the public wastewater system shall submit documentation to demonstrate the following: (5-8-09)

- a.** The system meets the relevant design, construction, and operating requirements of these rules; (5-8-09)
- b.** A plan is in place to deal with emergencies; (5-8-09)
- c.** A plan exists for replacement or improvement of infrastructure as necessary; and (5-8-09)
- d.** The system has trained personnel with an understanding of the technical and operational characteristics of the system. (5-8-09)

02. Financial Capacity. A demonstration of financial capacity must include, but is not limited to, the following information: (5-8-09)

- a.** Documentation that organizational and financial arrangements are adequate to construct and operate the wastewater system in accordance with these rules. This information can be provided by submitting estimated construction, operation, and maintenance costs, letters of credit, or other access to financial capital through public or private sources and, if available, a certified financial statement; (5-8-09)
- b.** Demonstration of revenue sufficiency, that includes, but is not limited to, billing and collection procedures; a proposed rate structure which demonstrates the availability of operating funds; revenues for depreciation and reserves; and the ability to accrue a capital replacement fund. A preliminary operating budget shall be provided; and (5-8-09)
- c.** Adequate fiscal controls must be demonstrated. (5-8-09)
- d.** For private municipal wastewater treatment plants, a performance bond, maintenance bond, or cash reserve of one (1) year of operation and maintenance costs is required to ensure continuous and adequate operation and maintenance. (5-8-09)

03. Managerial Capacity. In order to demonstrate adequate managerial capacity, the owner or

operator of a new wastewater system shall submit at least the following information to the Department: (5-8-09)

a. Clear documentation of legal ownership and any plans that may exist for transfer of that ownership upon completion of construction or after a period of operation; (5-8-09)

b. The name, address, and telephone number of the person who will be accountable for ensuring that the wastewater system is in compliance with these rules; (5-8-09)

c. The name, address, and telephone number of the responsible charge operator; (5-8-09)

d. A description of the manner in which the wastewater system will be managed. Information such as by-laws, restrictive covenants, articles of incorporation, or procedures and policy manuals which describe the management organizational structure shall be provided; (5-8-09)

e. A recommendation of staff qualifications, including training, experience, certification or licensing, and continuing education; (5-8-09)

f. An explanation of how the wastewater system will establish and maintain effective communications and relationships between the wastewater system management, its customers, professional service providers, and any applicable regulatory agencies; and (5-8-09)

g. Evidence of planning for future growth, equipment repair and maintenance, and long term replacement of system components. (5-8-09)

04. Consolidation. In demonstrating new system capacity, the owner of the proposed new system must investigate the feasibility of obtaining wastewater service from an established public wastewater system. If such service is available, but the owner elects to proceed with an independent system, the owner must explain why this choice is in the public interest in terms of environmental protection, affordability to wastewater users, and protection of public health. (5-8-09)

410. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES -- FACILITY PLANS.

01. Facility Plans Required. All new municipal wastewater treatment or disposal facilities, and all existing municipal wastewater treatment or disposal facilities undergoing material modification or expansion, are required to have a current facility plan that shall address all applicable issues specifically required in Sections 410 and 420 through 599 of these rules including, but not limited to, hydraulic capacity, treatment capacity, project financing, and operation and maintenance considerations. The facility plan shall address these issues sufficiently to determine the effects of the project on the overall wastewater infrastructure. Material modification or expansion that requires a facility plan includes upgraded, or rehabilitated municipal wastewater treatment or disposal facilities and major collection, interceptor sewer, pump station projects, and septage transfer station projects. Facility plans must address the entire potential service area of the project. A facility plan may be completed for collection systems only. If such a collection system facility plan is prepared, and flows increase in excess of the design capacity of downstream collection and treatment facilities, the impact of the flow shall be addressed in the facility plan. (5-8-09)

a. Department-reviewed simple wastewater main extension projects. A facility plan is not required if the Department is provided documentation supporting the ability of the wastewater system to provide service for the simple wastewater main extension without adding wastewater pumping stations or treatment capacity to the system and without overloading the existing collection system. Documentation may be in the form of: (5-8-09)

i. Hydraulic modeling; (5-8-09)

ii. Usage data and flow calculations; (5-8-09)

iii. Declining balance reports that demonstrate the system has the capacity to supply the service area of the system served by the extension; or (5-8-09)

- iv. Other documentation acceptable to the Department. (5-8-09)
- b. **QLPE-Reviewed Simple Wastewater Main Extension Projects.** A Department-approved facility plan is not required to be in place prior to the QLPE approving simple wastewater main extensions pursuant to Subsection 400.03.b., provided that the system is in compliance with the facility and design standards in the area served by the extension. If the Department has not approved a facility plan which covers the proposed simple wastewater main extension, then the system owner or the QLPE must include with the transmittal letter documentation supporting the ability of the system owner to provide service for the simple wastewater main extension without adding wastewater pumping stations or treatment capacity to the system and without overloading the existing collection system. The system owner shall provide this documentation to the QLPE as necessary. Documentation may be in the form of: (5-8-09)
 - i. Hydraulic modeling; (5-8-09)
 - ii. Usage data and flow calculations; (5-8-09)
 - iii. Declining balance reports that demonstrate the system has the capacity to supply the service area of the system served by the extension; or (5-8-09)
 - iv. Other documentation acceptable to the Department. (5-8-09)
- 02. Submittal to Department.** Facility plans shall be submitted to the Department for review and approval prior to the submission of plans and specifications for a project related to the facility plan. (5-8-09)
- 03. Engineer's Seal Required.** Facility plans submitted to the Department shall bear the imprint of an Idaho licensed professional engineer's seal that is both signed and dated by the engineer. (5-8-09)
- 04. Facility Plan Contents.** The facility plan shall assemble basic information, present criteria and assumptions, and examine alternative solutions with preliminary layouts and cost estimates. The facility plan is intended to address system wide growth, to identify system deficiencies, and to lay out a plan for system upgrades and expansion. The minimum requirements for a facility plan are located in Subsections 410.04.a. through 410.04.c. If specific items are not applicable to a particular facility plan, then the engineer shall state this in the facility plan and state the reason why it is not applicable. (5-8-09)
 - a. **New Wastewater System Facility Plan.** The facility plan for a new wastewater system must include sufficient detail to support the requirements of Sections 410 through 520 and address the items listed in Subsections 410.04.a.i. through 410.04.a.vii. of this rule. (5-8-09)
 - i. **Location.** Provide a general description and location of the system including service boundaries. (5-8-09)
 - ii. **Population.** Provide the estimated design population of the system. (5-8-09)
 - iii. **Wastewater flows.** Provide design data for domestic, commercial, and industrial wastewater generation, including average day, maximum day, maximum month, or peak hour flows. (5-8-09)
 - iv. **Collection.** Identify and describe any anticipated or proposed wastewater collection systems. Include specific detail on any anticipated or proposed wastewater pumping stations and on any anticipated or proposed wastewater interceptor or trunk lines. (5-8-09)
 - v. **Treatment.** Identify and describe any anticipated or proposed treatment works. Provide specific detail on the type and level of treatment and the required capacity of the treatment system. (5-8-09)
 - vi. **Disposal.** Identify and describe any anticipated or proposed wastewater disposal system(s). Include specific information on the location and method of disposal and information on any existing disposal permits or estimated timelines to obtain anticipated required permits. (5-8-09)

vii. Drinking water. Describe the drinking water distribution system with reference to the relationship to existing or proposed wastewater structures which may affect the operation and location of the wastewater system. (5-8-09)

b. Existing Wastewater System Facility Plan. The facility plan for an existing wastewater system must include sufficient detail to support the requirements of Sections 410 through 520, address all items in Subsections 410.04.a.i. through 410.04.a.vii., and address all items in Subsections 410.04.b.i. through 410.04.b.viii. (5-8-09)

i. Provide a hydraulic analysis of the collection system if requested by the Department. Any analysis of an existing collection system shall be properly calibrated. The type and sophistication of the analysis shall be dependent on the type of the system. (5-8-09)

ii. Identify and evaluate problems or deficiencies related to the wastewater system. (5-8-09)

iii. Identify the design capacity of existing facilities and the current operating flows. (5-8-09)

iv. Describe financing options for projects identified in the facility plan. (5-8-09)

v. Set forth anticipated charges for users. (5-8-09)

vi. Review organizational and staffing requirements. (5-8-09)

vii. Offer a project(s) recommendation for client consideration. (5-8-09)

viii. Outline official actions and procedures to implement the project. (5-8-09)

c. Wastewater System Facility Plan Funded by the State Revolving Fund. If the project is funded by the state revolving fund or a state grant, the facility plan must meet the requirements of Subsections 410.04.a. and 410.04.b., and other requirements that may also apply. See IDAPA 58.01.12 "Rules for Administration of Water Pollution Control Loans," and IDAPA 58.01.04, "Rules for Administration of Wastewater Treatment Facility Grants." (5-8-09)

d. Facility Plan Guidance. A checklist which can be used for guidance can be found at http://www.deq.idaho.gov/water/permits_forms/forms/waste_water/form_i_report_checklist.pdf. This checklist is for Department grant and loan projects, but may be used in part or in whole as a guide to assist in the development of any facility plan. (5-8-09)

411. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES - PRELIMINARY ENGINEERING REPORTS.

01. **Preliminary Engineering Reports Required.** Preliminary engineering reports are required for municipal wastewater treatment or disposal facility projects that require plan and specification review and approval pursuant to Subsection 400.03 and shall address all applicable issues specifically required in Sections 411 through 599 of these rules including, but not limited to, purpose, scope, hydraulic capacity, treatment capacity, and operation and maintenance considerations sufficiently to determine the effects of the project on the overall wastewater infrastructure. Preliminary engineering reports must be completed for major wastewater collection system projects, all pump station projects, all treatment plant designs and upgrades, and all septage transfer stations. Preliminary engineering reports are not required for simple wastewater main extensions that are approved in accordance with Subsections 410.01.a. or 410.01.b. (5-8-09)

02. **Submittal to Reviewing Authority.** Preliminary engineering reports shall be submitted to the Department for review and must be approved by the Department prior to the submission of plans and specifications. (5-8-09)

03. **Preliminary Engineering Report Contents.** The preliminary engineering report must include sufficient detail to demonstrate that the proposed project meets applicable criteria. The preliminary engineering report generally addresses project specific issues rather than the overall system-wide plan. The preliminary engineering

report shall identify and evaluate wastewater related problems; assemble basic information; present criteria and assumptions; examine alternative solutions with preliminary layouts and cost estimates; offer a conclusion with a proposed project; and outline official actions and procedures to implement the project. The items included in Subsections 411.03.a. through 411.03.c., and other items specifically called for in Sections 426 through 599, shall be addressed in detail in the preliminary engineering report. If specific items are not applicable to a particular design, then the designer shall state this in the preliminary engineering report and state the reason why it is not applicable. Items adequately addressed in the facility plan under which the project is being designed, may be addressed by reference for purposes of the preliminary engineering report. (5-8-09)

a. Major Wastewater Collection System Projects. Items applicable to preliminary engineering reports for major wastewater collection system projects are listed in Subsections 411.03.a.i. through 411.03.a.vi. (5-8-09)

i. Coordination with Facility Plan. The preliminary engineering report shall discuss or reference items provided in the Department-approved facility plan. These items include, but are not limited to: (5-8-09)

- (1) Location of project; (5-8-09)
- (2) Population served by project; (5-8-09)
- (3) Existing and proposed wastewater flows; (5-8-09)
- (4) Existing and proposed collection system; (5-8-09)
- (5) Existing and proposed treatment works; (5-8-09)
- (6) Existing and proposed disposal methods; (5-8-09)
- (7) Drinking water system impacts; (5-8-09)
- (8) Hydraulic analysis; and (5-8-09)
- (9) Financing methods. (5-8-09)

ii. Design criteria. The preliminary engineering report shall discuss and present the design criteria applicable to the proposed project. The design criteria includes, but is not limited to: (5-8-09)

- (1) Wastewater flow rates including peak hour flows; (5-8-09)
- (2) Current project fifty (50) year design and build-out conditions; (5-8-09)
- (3) Piping size, material, and installation methods; (5-8-09)
- (4) Depth of bury and slope; (5-8-09)
- (5) Soil and ground water conditions; (5-8-09)
- (6) Corrosion protection; and (5-8-09)
- (7) Odor control. (5-8-09)

iii. Code provisions. The preliminary engineering report shall include a summary of applicable codes and standards that apply to the proposed project. (5-8-09)

iv. Cost estimate. The preliminary engineering report shall provide as applicable estimated construction costs for public works projects or projects funded by public monies. (5-8-09)

v. Construction schedule. The preliminary engineering report shall include the proposed construction

schedule. (5-8-09)

vi. Environmental review. The preliminary engineering report shall include an environmental review. See the definition for environmental review in Section 010 for additional information. (5-8-09)

b. Wastewater Pump Station Projects. Items applicable to preliminary engineering reports for wastewater pump station projects include all items listed in Subsection 411.03.a. and items listed in Subsections 411.03.b.i. through 411.03.b.iv. (5-8-09)

i. Design criteria. The preliminary engineering report shall discuss and present the design criteria applicable to the proposed project. The design criteria includes, but is not limited to: (5-8-09)

(1) Wastewater flow rates including average day, maximum day, and peak hour flows; (5-8-09)

(2) Influent wastewater characteristics, including characteristics during periods of wet weather flows; (5-8-09)

(3) Size and configuration; and (5-8-09)

(4) Redundancy provisions. (5-8-09)

ii. Site evaluation and layout. The preliminary engineering report shall describe the proposed site and layout of the wastewater pumping station. This information includes, but is not limited to: (5-8-09)

(1) Currently proposed facilities; (5-8-09)

(2) Geotechnical investigation and provisions including buoyancy calculations if required; (5-8-09)

(3) Flood control provisions; (5-8-09)

(4) Security; (5-8-09)

(5) Operations and maintenance assessments; and (5-8-09)

(6) Odor management plans. (5-8-09)

iii. Instrumentation and control system. The preliminary engineering report shall discuss instrumentation and control that will be provided. This information includes, but is not limited to: (5-8-09)

(1) System configuration; (5-8-09)

(2) Operator interface; (5-8-09)

(3) Process and instrumentation diagrams; and (5-8-09)

(4) Alarm systems. (5-8-09)

iv. Emergency operation. The preliminary engineering report shall describe how the system will be operated during power outages, equipment failures, or other unforeseen system failures. (5-8-09)

c. Wastewater Treatment Plants. Items applicable to preliminary engineering reports for wastewater treatment plant designs and upgrades include all items listed in Subsection 411.03.a., Subsection 411.03.b., and Subsections 411.03.c.i. through 411.03.c.iv. (5-8-09)

i. Design criteria. The preliminary engineering report shall discuss and present the design criteria applicable to the proposed project. The design criteria includes, but is not limited to: (5-8-09)

- flows;
- (1) Wastewater flow rates including average day, maximum day, maximum month, and peak hour (5-8-09)
 - (2) Effluent requirements; (5-8-09)
 - (3) Solids production, disposal, or recycling requirements; (5-8-09)
 - (4) Process units design criteria, process selection, and support data; (5-8-09)
 - (5) Mass balance calculations for process units including, but not limited to, flow and solids; and (5-8-09)
 - (6) Monitoring and reporting requirements. (5-8-09)
- ii. Site evaluation and layout. The preliminary engineering report shall describe the proposed site and layout of the wastewater system. This information includes, but is not limited to: (5-8-09)
- (1) Currently proposed facilities; (5-8-09)
 - (2) Facilities for twenty (20) year design conditions; (5-8-09)
 - (3) Facilities for build-out conditions; (5-8-09)
 - (4) Space for facilities potentially necessary to meet higher levels of treatment; (5-8-09)
 - (5) Liquid process facilities and conveyance; (5-8-09)
 - (6) Solids process facilities and conveyance; (5-8-09)
 - (7) Plant access and on-site roads and walkways; (5-8-09)
 - (8) Process piping and utilities; (5-8-09)
 - (10) Buffer zones; (5-8-09)
 - (11) Landscaping; (5-8-09)
 - (12) Administration and operations buildings; (5-8-09)
 - (13) Onsite laboratory facilities; and (5-8-09)
 - (14) Treatment during construction. (5-8-09)
- iii. Hydraulic profile. The preliminary engineering report shall provide a hydraulic profile for the proposed system. This information includes, but is not limited to: (5-8-09)
- (1) Twenty (20) year design facilities; (5-8-09)
 - (2) Provision for higher levels of treatment; (5-8-09)
 - (3) Receiving stream one hundred (100) year surface water elevation; and (5-8-09)
 - (4) Hydraulics and pipe sizing for build-out conditions. (5-8-09)
- iv. Process units. The preliminary engineering report shall describe in detail the proposed process units and discuss how the proposed units will interface with any existing process units. This information includes, but is not limited to: (5-8-09)

- (1) Current project and twenty (20) year design and build-out conditions; (5-8-09)
- (2) Size and number of units and loading rates; (5-8-09)
- (3) Redundancy provisions; (5-8-09)
- (4) Equipment type, size, performance criteria, and power requirements; (5-8-09)
- (5) Structure, equipment, and piping layout; (5-8-09)
- (6) Special code requirements; (5-8-09)
- (7) Cold temperature operation; and (5-8-09)
- (8) Procedures required for initial start-up of process unit(s), including procedures required for handling initial system flows that are less than minimum flow requirements for the process unit(s). (5-8-09)

04. Engineer's Seal Required. Preliminary engineering reports submitted to the Department shall bear the imprint of an Idaho licensed professional engineer's seal that is both signed and dated by the engineer. (5-8-09)

412. -- 419. (RESERVED).

420. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES -- SUBMISSION OF PLANS AND SUPPORT DOCUMENTS.

Submissions to the reviewing authority for construction of municipal wastewater treatment or disposal facilities shall include sealed plans and specifications, design criteria, the appropriate construction permit applications, review forms, and permit fee if required. The plans and specifications shall contain sufficient detail to allow for the contracting and construction of the wastewater systems. (4-11-06)

421. -- 424. (RESERVED).

425. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES - OPERATION AND MAINTENANCE MANUALS.

01. Manual Contents. An operation and maintenance manual or manuals shall be provided for all wastewater systems. The manual shall include, but is not limited to, the following contents: daily operating instructions, operator safety procedures, location of valves and other key system features, a parts list and parts order form(s), and information for contacting the responsible charge operators. An operational trouble-shooting section shall be supplied to the wastewater works as part of any proprietary unit installed in system facilities. (5-8-09)

02. Approval Required. Final operation and maintenance manuals for construction of wastewater systems that include lift stations or treatment works must be submitted to the Department for review and approval prior to start-up of the proposed system unless the system components are already covered in an existing manual. (5-8-09)

426. -- 429. (RESERVED).

430. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES -- DESIGN AND CONSTRUCTION OF WASTEWATER PIPELINES.

01. Design Capacity and Design Flow. In general, sewer capacities shall be designed for the estimated ultimate tributary population, except in considering parts of the systems that can be readily increased in capacity. (4-11-06)

02. Details of Design and Construction. (4-11-06)

- a. **Minimum Pipe Size.** Minimum pipe size for gravity sewer mains shall be eight (8) inches in diameter. Minimum pipe size for gravity sewer services shall be four (4) inches in diameter. Pipe diameters larger than these minimums shall be based on cleaning capability and hydraulic capacity, and shall conform with the required planning documents. (3-30-07)
- b. **Depth.** Wastewater pipelines shall be installed sufficiently deep or specifically designed to prevent freezing and to protect the facilities from surface loading. (4-11-06)
- c. **Buoyancy.** Buoyancy of wastewater pipelines shall be considered and flotation of the pipe shall be prevented with appropriate construction where high groundwater conditions are anticipated. (4-11-06)
- d. **Slope.** Gravity wastewater pipelines shall be designed to have sufficient slope and velocity to "self clean" or transport constituent solids to the treatment facility. Justification for these slopes shall be included in the preliminary engineering report and shall be based on widely used guidance documents or published friction coefficients and Manning's formula. (5-8-09)
- i. If the current or future ownership of the system is by a city, county, quasi-municipal corporation or regulated public utility and the velocities are less than self cleaning, the owner shall, as a condition of the Department's approval of plans and specifications, provide justification for the lower velocities and commit to, at a minimum, annually service wastewater pipelines to flush, transport, or remove solids from wastewater pipelines. This would include the use of cutting tools for roots, vactor trucks, and any other method required to keep the pipelines clean, intact and flowing. That commitment shall be in the form of a letter from both the owner and the future owner entity stating said commitment, and shall include a discussion of the current and future owners' capacity to do said flushing. (3-30-07)
- ii. If the current or future ownership of the system is by a developer that is passing the operation and maintenance on to a homeowner's association or other similar entity, then the design shall not allow for velocities that are less than self cleaning. (3-30-07)
- e. **Materials.** (4-11-06)
- i. Any generally accepted material for wastewater pipelines will be given consideration. The material selected should be adapted to local conditions, such as: character of industrial wastes, possibility of septicity, soil characteristics, exceptionally heavy external loadings, abrasion, corrosion, and similar problems. (4-11-06)
- ii. Couplings complying with applicable standard specifications shall be used for joining dissimilar materials. (4-11-06)
- iii. For new pipe materials for which standards have not been established, the design engineer shall provide complete pipe specifications and installation specifications developed on the basis of criteria adequately documented and certified in writing by the pipe manufacturer to be satisfactory for the specific application. (4-11-06)
- f. **Installation.** Installation specifications shall contain appropriate requirements based on the criteria, standards, and requirements established by industry in its technical publications. Reference current edition of the Idaho Standards for Public Works Construction for assistance in designing such specifications. (3-30-07)
- g. **Joints and Infiltration.** (4-11-06)
- i. The installation of joints and the materials used shall be included in the specifications. Wastewater pipeline joints shall be designed to minimize infiltration and to prevent the entrance of roots throughout the life of the system. Reference current edition of the Idaho Standards for Public Works Construction for assistance in designing such specifications. (3-30-07)
- ii. Service connections to the wastewater pipeline main shall be water tight and not protrude into the wastewater pipelines. If a saddle type connection is used, it shall be a device designed to join with the types of pipe which are to be connected. All materials used to make service connections shall be compatible with each other and with the pipe materials to be joined and shall be corrosion proof. (4-11-06)

h. Manholes. Manholes shall be installed at the end of each line; at all changes in grade, size, or alignment; at all intersections. Cleanouts may be used only for special conditions and shall not be substituted for manholes nor installed at the end of laterals greater than one hundred fifty (150) feet in length. (4-11-06)

i. Testing. Testing shall conform with Section 501.3.4 of the "Idaho Standards for Public Works Construction," incorporated by reference into these rules at Section 004. (3-30-07)

j. Inverted Siphons. Inverted siphons shall have not less than two (2) barrels or pipes. They shall be provided with necessary appurtenances for maintenance, convenient flushing, and cleaning equipment. Design shall provide sufficient head and appropriate pipe sizes to secure sufficient velocities for design average flows. (3-30-07)

k. Wastewater Pipelines in Relation to Surface Water Bodies. The top of all wastewater pipelines entering or crossing surface water bodies shall be at a sufficient depth below the natural bottom of the bed or otherwise designed to protect the wastewater pipeline. (4-11-06)

i. Wastewater pipelines located adjacent to surface water bodies shall be located outside of the bed and sufficiently removed therefrom to provide for future possible stream widening and to prevent pollution by siltation during construction. (3-30-07)

ii. Structures. Wastewater pipeline outfalls, headwalls, manholes, gate boxes, or other structures shall be designed to address anticipated flood flows of the surface water bodies. (4-11-06)

iii. Alignment. Wastewater pipelines crossing surface water bodies should be designed to cross the surface water body as nearly perpendicular to the surface water body flow as possible and shall be free from change in grade. (4-11-06)

iv. Materials. Wastewater pipelines entering or crossing surface water bodies shall be constructed of water transmission pressure rated pipe with restrained joints conforming to Section 401.2.9 of the "Idaho Standards for Public Works Construction," incorporated by reference into these rules at Section 004, or other suitable pipe with restrained joints capable of being installed to remain watertight and free from changes in alignment or grade. Material used to back-fill the trench shall be concrete slurry, stone, coarse aggregate, washed gravel, or other materials which will not readily erode, cause siltation, damage pipe during placement, or corrode the pipe. (3-30-07)

v. Siltation and Erosion. Construction methods that will minimize siltation and erosion shall be employed. (4-11-06)

l. Aerial Crossings. Support shall be provided for all joints in pipes utilized for aerial crossings. Restrained joints or structural casings are required. (4-11-06)

m. Cross Connections Prohibited. There shall be no physical connections between a public or private potable water supply system and a wastewater pipeline, or appurtenance thereto, which would permit the passage of any wastewater or polluted water into the potable supply. No water pipe shall pass through or come into contact with any part of a wastewater pipeline manhole. (4-11-06)

n. Protection of Water Sources, Supplies. When wastewater pipelines are proposed in the vicinity of any drinking water sources or supplies or other drinking water facilities, requirements of IDAPA 58.01.08, "Idaho Rules for Public Drinking Water Systems," shall be used to confirm acceptable isolation distances. (4-11-06)

o. Non-Potable Pipelines in Relation to Potable Water Pipelines. The Department will use the Memorandum of Understanding with the Plumbing Bureau as guidance in determining the relative responsibilities for reviewing service lines. The conditions of Subsections 542.07.a. and 542.07.b. shall apply to all potable services constructed or reconstructed after April 15, 2007 and where the Department or the QLPE is the reviewing authority. (5-8-09)

i. Parallel installation requirements. (5-8-09)

- (1) Non-potable mains in relation to potable mains: (5-8-09)
 - (a) Greater than ten (10) feet separation: no additional requirements based on separation distance. (5-8-09)
 - (b) Ten (10) feet to six (6) feet separation: separate trenches, with potable main above non-potable main, and non-potable main constructed with potable-water class pipe. (4-11-06)
 - (c) Less than six (6) feet separation: design engineer to submit data to the Department for review and approval that this installation will protect public health and environment and non-potable main constructed with potable-water class pipe. (3-30-07)
 - (d) Non-potable mains are prohibited from being located in the same trench as potable mains. (3-30-07)
 - (e) Pressure sewage mains shall be no closer horizontally than ten (10) feet from potable mains. (3-30-07)
- (2) New non-potable services in relation to potable services, new non-potable services in relation to potable mains, and new potable services in relation to non-potable mains. (5-8-09)
 - (a) Greater than six (6) feet separation: no additional requirements based on separation distances. (5-8-09)
 - (b) Less than six (6) feet separation: design engineer to submit data that this installation will protect public health and the environment and non-potable service constructed with potable water class pipe. (5-8-09)
 - (c) New potable services are prohibited from being located in the same trench as non-potable mains or non-potable services. (5-8-09)
- ii. Requirements for potable water mains or services crossing non-potable mains or services. For the purposes of Subsection 430.o.ii., the term "pipeline" applies to both mains and services. (5-8-09)
 - (1) Eighteen (18) inches or more vertical separation with potable pipeline above non-potable pipeline: non-potable pipeline joint to be as far as possible from the potable water pipeline. (5-8-09)
 - (2) Eighteen (18) inches or more vertical separation with potable water pipeline below non-potable pipeline: Non-potable pipeline joint to be as far as possible from the potable water pipeline, and non-potable pipeline must be supported through the crossing to prevent settling. (5-8-09)
 - (3) Less than eighteen (18) inches vertical separation: (5-8-09)
 - (a) Non-potable pipeline joint to be as far as possible from the potable water pipeline; and either (5-8-09)
 - (b) Non-potable pipeline constructed with potable water class pipe for a minimum of ten (10) feet either side of potable pipeline with a single twenty (20) foot section of potable water class pipe centered on the crossing; or (5-8-09)
 - (c) Sleeve non-potable or potable pipeline with potable water class pipe for ten (10) feet either side of crossing. Use of hydraulic cementitious materials such as concrete, controlled density fill, and concrete slurry encasement is not allowed as a substitute for sleeving. (5-8-09)
 - (d) If the potable pipeline is below non-potable pipeline, the non-potable pipeline must also be supported through the crossing to prevent settling. (5-8-09)
 - (4) Pressure sewage mains shall be no closer vertically than eighteen (18) inches from potable mains.

(5-8-09)

iii. Existing potable services in relation to new non-potable mains, existing non-potable services in relation to new potable mains, and existing potable services in relation to new non-potable services shall meet the requirements of Subsection 430.02.o.ii., where practical, based on cost, construction factors, and public health significance. If the Department determines that there are significant health concerns with these services, such as where a large existing service serves an apartment building or a shopping center, then the design shall conform with Subsection 430.02.o.ii. (5-8-09)

431. -- 439. (RESERVED).

440. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES - WASTEWATER PUMPING STATIONS.

01. General. Section 440 regulates both public and private municipal wastewater collection pump stations and does not regulate individual residence pump stations, individual residence grinder pump stations, or individual residence septic tank effluent pump stations. See Section 441 for regulation of those types of pump stations. (3-30-07)

a. **Flooding.** Wastewater pumping station structures and electrical and mechanical equipment shall be protected from physical damage by the one hundred (100) year flood. Wastewater pumping stations shall remain fully operational and accessible during the twenty-five (25) year flood. Regulations of state and federal agencies regarding flood plain obstructions shall be considered. (3-30-07)

b. **Accessibility and Security.** The pumping station shall be accessible by maintenance vehicles during all weather conditions. (3-30-07)

c. **Grit.** The wet well and pump station piping shall be designed to avoid operational problems from the accumulation of grit. (3-30-07)

d. **Safety.** Provisions shall be made to consider the protection of maintenance personnel and visitors from typical and foreseeable hazards in accordance with the engineering standards of care. See also Subsection 450.07. (3-30-07)

02. Design. Design of wastewater pumping stations shall meet the applicable requirements of Subsections 440.02.a. through 440.02.i. (3-30-07)

a. **Type.** Wastewater pumping stations in general use fall into four types: wet well/dry well, submersible, suction lift, and screw pump. (3-30-07)

b. **Structures.** (3-30-07)

i. **Separation.** Dry wells shall be completely separated from the wet well. Common walls must be gas tight. (3-30-07)

ii. **Equipment Removal.** Provision shall be made to facilitate removing pumps, motors, and other mechanical and electrical equipment. Individual pump and motor removal must not interfere with the continued operation of remaining pumps. (3-30-07)

iii. **Access and Safety Landings.** (3-30-07)

(1) **Access.** Suitable means of access for maintenance personnel wearing self-contained breathing apparatus shall be provided to dry wells and to wet wells. See also Subsection 450.07. (3-30-07)

(2) **Safety Landings.** Section 009 provides a reference to requirements of the Occupational Safety and Health Administration (OSHA), compliance with which may be required by other law. (3-30-07)

- iv. Buoyancy. Where high groundwater conditions are anticipated, buoyancy of the wastewater pumping station structures shall be considered and, if necessary, adequate provisions shall be made for protection. (3-30-07)
- v. Construction Materials. Materials shall be selected that are appropriate under conditions of exposure to hydrogen sulfide and other corrosive gases, greases, oils, and other constituents frequently present in wastewater. This is particularly important in the selection of metals and paints. (3-30-07)
- c. Pumps. (3-30-07)
 - i. Multiple Units. Multiple pumps shall be provided. Units shall have capacity such that, with any unit out of service, the remaining units will have capacity to handle the design peak hourly flow. (3-30-07)
 - ii. Protection Against Clogging. Pumps (except screw pumps) handling separate sanitary wastewater from thirty (30) inch or larger diameter sewers shall be protected by bar racks. Appropriate protection from clogging shall also be considered for small pumping stations. (3-30-07)
 - iii. Pump Openings. Pumps handling unscreened raw wastewater shall be capable of passing spheres of at least three (3) inches in diameter or be a grinder pump. (3-30-07)
 - iv. Priming. The pump shall be placed so that, under normal operating conditions, it will operate under a positive suction head, except as specified in Subsection 440.03. (3-30-07)
 - v. Electrical Equipment. Section 009 provides a reference to the requirements of the National Electrical Code, compliance with which may be required by other law. (3-30-07)
 - vi. Intake. Section 008 provides a reference to the American National Standard Institute/Hydraulic Institute ANSI/HI 9.8, American National Standard for Centrifugal and Vertical Pump Intake Design. (3-30-07)
 - vii. Dry Well Dewatering. Dry wells shall be equipped with a positive means for dewatering. (3-30-07)
 - viii. Pumping Rates. The pumps and controls of main pumping stations shall be selected to operate with varying rates. The pump control system design shall take into account, and minimize as needed, downstream impact of pump discharge hydraulic surges. The station design capacity shall be based on peak hourly flow as determined in accordance with Section 411 and shall be adequate to maintain a velocity in the force main sufficient to avoid solids deposition. See Subsection 440.09. (3-30-07)
- d. Controls. Water level control sensing devices shall be designed to allow for automatic control of pumps. (3-30-07)
- e. Valves. (3-30-07)
 - i. Suction Line. Suitable shutoff valves shall be placed on the suction lines of dry pit pumps. (3-30-07)
 - ii. Discharge Line. Suitable shutoff and check valves shall be placed on the discharge line of each pump (except on screw pumps). The check valve shall be located between the shutoff valve and the pump. Check valves shall be suitable for the material being handled and shall be placed on the horizontal portion of the discharge piping except for ball checks, which may be placed in the vertical run. Valves shall be capable of withstanding normal pressure and water hammer. All shutoff and check valves shall be operable from the floor level and accessible for maintenance. Outside levers are recommended on swing check valves. (3-30-07)
- f. Wet Wells. (3-30-07)
 - i. Section 008 provides a reference to the American National Standard Institute/Hydraulic Institute ANSI/HI 9.8, American National Standard for Centrifugal and Vertical Pump Intake Design as a guidance document. (3-30-07)

ii. **Air Displacement.** Covered wet wells shall have provisions for air displacement to the atmosphere, such as an inverted "j" tube or other means. (3-30-07)

g. **Safety Ventilation.** Adequate ventilation shall be provided for all pump stations unless access is provided using confined space entry procedures. Where the dry well is below the ground surface, mechanical ventilation is required. If screens or mechanical equipment requiring maintenance or inspection are located in the wet well, permanently installed ventilation is required. There shall be no interconnection between the wet well and dry well ventilation systems. Section 008 provides a reference to guidance documents; see Subsection 008.11. (3-30-07)

h. **Flow Measurement.** Suitable methods for measuring wastewater flow shall be addressed at all pumping stations. (3-30-07)

i. **Water Supply.** There shall be no physical connection between any potable water supply and a wastewater pumping station which, under any conditions, might cause contamination of the potable water supply. If a potable water supply connection is made to the station, the connection shall comply with IDAPA 58.01.08, "Idaho Rules for Public Drinking Water Systems." (3-30-07)

03. Suction Lift Pump Stations - Special Considerations. Suction lift pumps shall meet the applicable requirements of Subsection 440.02. (3-30-07)

a. **Pump Priming and Lift Requirements.** Suction lift pumps shall be of the self-priming or vacuum-priming type. Suction lift pump stations using dynamic suction lifts exceeding the limits outlined in Subsections 440.03.b. through 440.03.d. may be approved upon submission of factory certification of pump performance and detailed calculations indicating satisfactory performance under the proposed operating conditions. (3-30-07)

b. **Self-Priming Pumps.** Self-priming pumps shall be capable of rapid priming and re-priming at the "lead pump on" elevation. Such self-priming and re-priming shall be accomplished automatically under design operating conditions. (3-30-07)

c. **Vacuum-Priming Pumps.** Vacuum-priming pump stations shall be equipped with dual vacuum pumps capable of automatically and completely removing air from the suction lift pump. The vacuum pumps shall be adequately protected from damage due to wastewater. The combined total of dynamic suction lift at the "pump off" elevation and required net positive suction head at design operating conditions shall not exceed twenty-two (22) feet. (3-30-07)

d. **Equipment, Wet Well Access, and Valving Location.** The pump equipment compartment shall be above grade or offset and shall be effectively isolated from the wet well to prevent a hazardous and corrosive sewer atmosphere from entering the equipment compartment. Wet well access shall not be through the equipment compartment and shall be at least twenty-four (24) inches in diameter. Gasketed replacement plates shall be provided to cover the opening to the wet well for pump units removed for servicing. Valving shall not be located in the wet well. (3-30-07)

04. Submersible Pump Stations - Special Considerations. Submersible pump stations shall meet the applicable requirements of Subsection 440.02, except as modified in Subsection 440.04. (3-30-07)

a. **Construction.** Submersible pumps and motors shall be designed specifically for raw wastewater use, including totally submerged operation during a portion of each pumping cycle. An effective method to detect shaft seal failure or potential seal failure shall be provided. (3-30-07)

b. **Pump Removal.** Submersible pumps shall be readily removable and replaceable without personnel entering or dewatering the wet well, or disconnecting any piping in the wet well. (3-30-07)

c. **Electrical Equipment.** Section 009 provides a reference to the requirements of the National Electrical Code, compliance with which may be required by other law. (3-30-07)

i. **Power Supply and Control Circuitry.** Electrical supply, control, and alarm circuits shall be designed

to provide strain relief and to allow disconnection from outside the wet well. Terminals and connectors shall be protected from corrosion by location outside the wet well or through use of watertight seals. (3-30-07)

ii. Controls. The motor control center shall be located outside the wet well, be readily accessible, and be protected by a conduit seal or other appropriate measures to prevent the atmosphere of the wet well from gaining access to the control center. The seal shall be located so that the motor may be removed and electrically disconnected without disturbing the seal. When such equipment is exposed to weather, it is recommended that it meet the requirements of weatherproof equipment NEMA 3R or 4. (3-30-07)

iii. Power Cord. Pump motor power cords shall be designed for flexibility and serviceability under conditions of extra hard usage. Ground fault interruption protection shall be used to de-energize the circuit in the event of any failure in the electrical integrity of the cable. Power cord terminal fittings shall be corrosion-resistant and constructed in a manner to prevent the entry of moisture into the cable, shall be provided with strain relief appurtenances, and shall be designed to facilitate field connecting. (3-30-07)

d. Valves. Valves required under Subsection 440.02 shall be located in a separate valve chamber. Provisions shall be made to remove or drain accumulated water from the valve chamber. The valve chamber may be dewatered to the wet well through a drain line with a gas and water tight valve. Check valves that are integral to the pump need not be located in a separate valve chamber provided that the valve can be removed from the wet well in accordance with Subsection 440.04. Access shall be provided in accordance with Subsection 440.02. (3-30-07)

05. Screw Pump Stations - Special Considerations. Screw pump stations shall meet the applicable requirements of Subsection 440.02. (3-30-07)

a. Covers. Covers or other means of excluding direct sunlight shall be provided as necessary to eliminate adverse effects from temperature changes. (3-30-07)

b. Pump Wells. A positive means of isolating individual screw pump wells shall be provided. (3-30-07)

c. Bearings. Submerged bearings shall be lubricated by an automated system without pump well dewatering. (3-30-07)

06. Alarm Systems. Alarm systems with a backup power source shall be provided for pumping stations. The alarm shall be activated in cases of power failure, dry well sump and wet well high water levels, pump failure, unauthorized entry, or other cause of pump station malfunction. Pumping station alarms, including identification of the alarm condition, shall be transmitted to a twenty-four (24) hour response center. Audio-visual alarm systems may be acceptable in some cases in lieu of a transmitting system depending upon location, station holding capacity, and inspection frequency. (3-30-07)

07. Emergency Operation. (3-30-07)

a. Objective. The objective of emergency operation is to prevent the unintended discharge of raw or partially treated wastewater to any waters or land surface and to protect public health by preventing back up of wastewater and subsequent discharge to basements, streets, and other public and private property. (3-30-07)

b. Emergency Pumping Capability. Emergency pumping capability is required for all new lift stations constructed after April 15, 2007. Emergency pumping capability is required for all existing lift stations that undergo a material modification or expansion unless overall system reliability can be proven adequate to the Department as shown in Subsections 440.07.b.i. and 440.07.b.ii. or overflow prevention is provided by adequate emergency storage capacity as defined in these rules. If required, emergency pumping capability shall be accomplished by connection of the station to at least two (2) independent utility substations as determined by and stated in a letter from the appropriate power provider, by provision of portable or in-place internal combustion engine equipment which will generate electrical or mechanical energy, or by the provision of portable pumping equipment. Such emergency standby systems shall have sufficient capacity to start up and maintain the total rated running capacity of the station. Regardless of the type of emergency standby system provided, a portable pump connection to the force main with rapid connection capabilities and appropriate valving shall be provided outside the dry well and wet well. (3-30-07)

i. System reliability is considered adequate if power grid outages average three (3) or less per year based on data for the three (3) previous years with no more than six (6) outages in a single year. (3-30-07)

ii. Outage duration averages less than four (4) hours based on data for the three (3) previous years, with not more than one (1) outage during the three (3) previous year period exceeding eight (8) hours. Power loss for at least thirty (30) minutes qualifies as an outage. (3-30-07)

c. Equipment Requirements. (3-30-07)

i. General. The following general requirements shall apply to all internal combustion engines used to drive auxiliary pumps, service pumps through special drives, or electrical generating equipment: (3-30-07)

(1) Engine Protection. The engine must be protected from operating conditions that would result in damage to equipment. Unless continuous manual supervision is planned, protective equipment shall be capable of shutting down the engine and activating an alarm on site and as provided in Subsection 440.06. Protective equipment shall monitor for conditions of low oil pressure and overheating, except that oil pressure monitoring will not be required for engines with splash lubrication. (3-30-07)

(2) Size. The engine shall have adequate rated power to start and continuously operate under all connected loads. (3-30-07)

(3) Fuel Type. Reliability and ease of starting, especially during cold weather conditions, shall be addressed in the selection of the type of fuel. (3-30-07)

(4) Fuel Storage. Fuel storage and piping facilities if provided shall be constructed in accordance with applicable state and federal regulations. (3-30-07)

(5) Engine Ventilation. The engine shall have adequate ventilation of fuel vapors and exhaust gases. (3-30-07)

(6) Routine Start-up. All emergency equipment shall be provided with instructions indicating the need for regular starting and running of such units at full loads. (3-30-07)

(7) Protection of Equipment. Emergency equipment shall be protected from damage at the restoration of regular electrical power. (3-30-07)

ii. Engine-Driven Pumping Equipment. Where permanently-installed or portable engine-driven pumps are used, the following requirements in addition to general requirements shall apply. (3-30-07)

(1) Pumping Capacity. Engine-driven pumps shall meet the design pumping requirements unless storage capacity is available for flows in excess of pump capacity. Pumps shall be designed for anticipated operating conditions, including suction lift if applicable. (3-30-07)

(2) Operation. The engine and pump shall be equipped to provide automatic start-up and operation of pumping equipment unless manual start-up and operation is justified. Provisions shall also be made for manual start-up. Where manual start-up and operation is justified, storage capacity and alarm system must meet the requirements of Subsection 440.07.c.ii(3). (3-30-07)

(3) Portable Pumping Equipment. Where part or all of the engine-driven pumping equipment is portable, adequate emergency storage capacity with alarm system shall be provided to allow time for detection of pump station failure and transportation and hookup of the portable equipment. (3-30-07)

iii. Engine-Driven Generating Equipment. Where permanently-installed or portable engine-driven generating equipment is used, the following requirements shall apply in addition to the general requirements of Subsection 440.07. (3-30-07)

- (1) Generating Capacity. (3-30-07)
- (a) Generating unit size shall be adequate to provide power for pump motor starting current and for lighting, ventilation, and other auxiliary equipment necessary for safety and proper operation of the lift station. (3-30-07)
- (b) The operation of only one pump during periods of auxiliary power supply must be justified. Such justification may be made on the basis of the design peak hourly flows relative to single-pump capacity, anticipated length of power outage, and storage capacity. (3-30-07)
- (c) Manual or special sequencing controls shall be provided to start pump motors unless the generating equipment has capacity to start all pumps simultaneously with auxiliary equipment operating. (3-30-07)
- (2) Operation. Provisions shall be made for automatic and manual startup and load transfer unless only manual start-up and operation is justified. Automatic transfer switches shall be UL listed and meet NEC requirements. The generator must be protected from operating conditions that would result in damage to equipment. Provisions shall be made to allow the engine to start and stabilize at operating speed before assuming the load. Where manual start-up and transfer is justified, storage capacity and alarm system must meet the requirements of Subsection 440.07.c.iii(3). (3-30-07)
- (3) Portable Generating Equipment. Where portable generating equipment and manual transfer is provided, adequate emergency storage capacity with alarm system shall be provided to allow time for detection of pump station failure and transportation and connection of generating equipment. Special electrical connections and double throw switches shall be provided for connecting portable generating equipment. Manual transfer switches shall be UL listed and meet NEC requirements. (3-30-07)
- iv. Independent Utility Substations. Where independent substations are used for emergency power, each separate substation and its associated transmission lines shall be capable of starting and operating the pump station at its rated capacity. (3-30-07)
- 08. Instructions and Equipment.** Wastewater pumping stations and portable equipment shall be supplied with a complete set of operational instructions, including emergency procedures, maintenance schedules, tools, and such spare parts as may be necessary. (3-30-07)
- 09. Operation and Maintenance.** (3-30-07)
- a. An operation and maintenance manual shall be submitted to and approved by the Department as required by Section 425. Adherence to the terms of this approved manual shall be required. The owner shall be responsible for maintaining the wastewater facility in a manner that assures its designed operation. (3-30-07)
- b. For private municipal wastewater collection pump stations, documents that detail the technical, managerial, and financial capabilities of the private entity to properly operate and maintain said pump station for the long term shall be submitted to the Department for approval prior to operation. (3-30-07)
- 10. Force Mains.** (3-30-07)
- a. Velocity and Diameter. At design pumping rates, a cleansing velocity of at least two (2) feet per second shall be maintained. (3-30-07)
- b. Air and Vacuum Relief Valve. An air relief valve shall be placed at high points in the force main to prevent air locking. The force main configuration and head conditions shall be evaluated as to the need for and placement of vacuum relief valves. (3-30-07)
- c. Termination. The force mains from other than individual grinder pump stations shall enter a receiving manhole. Corrosion protection for the receiving manhole shall be provided. Control of odors at such discharge points shall be evaluated. (3-30-07)

d. Pipe and Design Pressure. Pipe and joints shall be equal to water main strength materials suitable for design conditions. The force main, reaction blocking, thrust restraint, and station piping shall be designed to withstand water hammer pressures and associated cyclic reversal of stresses that are expected with the cycling of wastewater lift stations. The use of surge valves, surge tanks, or other suitable means to protect the force main against severe pressure changes shall be evaluated. (3-30-07)

e. Special Construction. Force main construction near streams or water works structures and at water main crossings shall meet applicable provisions of Section 430. (3-30-07)

f. Design Friction Losses. (3-30-07)

i. Friction Coefficient. Friction losses through force mains shall be based on the Hazen and Williams formula or other acceptable methods. When the Hazen and Williams formula is used, the friction losses for varying values of "C" shall be evaluated for different types and ages of pipe. (3-30-07)

ii. Maximum Power Requirements. When initially installed, force mains will have a significantly higher "C" factor. The effect of the higher "C" factor shall be considered in calculating maximum power requirements and duty cycle time to prevent damage to the motor. The effects of higher discharge rates on selected pumps and downstream facilities shall also be considered. (3-30-07)

g. Identification. Where force mains are constructed of material which might cause the force main to be confused with potable water mains, the force main shall be appropriately identified using trench tape saying "raw sewage," "biohazard," or other appropriate wording. (3-30-07)

h. Leakage Testing. Leakage tests shall be specified including testing methods and leakage limits. Testing shall conform with Sections 401.3.6 and 505.3.3 of the "Idaho Standards for Public Works Construction," incorporated by reference into these rules at Section 004. (3-30-07)

i. Thrust Blocking or Restraint. Thrust blocking or restraint shall conform with Sections 401.3.4 of the "Idaho Standards for Public Works Construction," incorporated by reference into these rules at Section 004, or specific calculations reviewed and approved by the Department. (3-30-07)

j. Maintenance Considerations. Isolation valves shall be used if force mains connect into a common force main. (3-30-07)

k. Cover. Force mains shall be covered with sufficient earth or other insulation to prevent freezing or other physical damage. (3-30-07)

441. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES - INDIVIDUAL RESIDENCE WASTEWATER PUMPING STATIONS.

01. General. Section 441 regulates individual residence pump stations, individual residence grinder pump stations, and individual residence septic tank effluent pump stations. However, this rule does not regulate grinder pumps or their vaults that are inside of individual residences or other structures. Certain individual residence wastewater pumping stations may be under the jurisdiction of the Idaho Division of Building Safety, Plumbing Bureau. For further defining and delineating of the Plumbing Bureau's and the Department's statutory and regulatory duties and responsibilities with respect to individual residence wastewater pumping stations, see the Memorandum of Understanding referred to in Section 008. (5-8-09)

a. Flooding. Wastewater pumping station structures and electrical and mechanical equipment shall be protected from physical damage by the one hundred (100) year flood. Wastewater pumping stations shall remain fully operational and accessible during the twenty-five (25) year flood. Local, state and federal flood plain regulations shall be considered. (3-30-07)

b. Accessibility and Security. The pumping station shall be accessible by maintenance vehicles during all weather conditions. (3-30-07)

02. Design. Design of wastewater pumping stations shall meet the applicable requirements of Subsections 441.02.a. through 441.02.c. (3-30-07)

a. Pumps. (3-30-07)

i. Multiple Units. Duplex pumps for individual residence wastewater pump stations are not required. However, for developments having five (5) or more similar facilities, one (1) working spare pump for each size shall be provided and be readily available at all times. (3-30-07)

ii. Pump Openings. Pumps handling raw wastewater shall be capable of passing spheres of at least three (3) inches in diameter or be a grinder pump. (3-30-07)

iii. Priming. The pump shall be placed so that, under normal operating conditions, it will operate under a positive suction head. (3-30-07)

b. Controls. Water level control sensing devices shall be designed to allow for automatic control of pumps. (3-30-07)

c. Valves. Suitable means to facilitate pump removal and to prevent backflow shall be provided. All shutoff and check valves shall be accessible for maintenance. (3-30-07)

03. Submersible Pump Stations - Special Considerations. (3-30-07)

a. Construction. Submersible pumps and motors shall be designed specifically for raw wastewater use, including totally submerged operation during a portion of each pumping cycle. An effective method to detect shaft seal failure or potential seal failure shall be provided. (3-30-07)

b. Pump Removal. Submersible pumps shall be readily removable and replaceable without personnel entering or dewatering the wet well, or disconnecting any piping in the wet well. (3-30-07)

c. Electrical Equipment. Section 009 provides a reference to the requirements of the National Electrical Code, compliance with which may be required by other law. (3-30-07)

i. Power Supply and Control Circuitry. Electrical supply, control, and alarm circuits shall be designed to provide strain relief and to allow disconnection from outside the wet well. Terminals and connectors shall be protected from corrosion by location outside the wet well or through use of watertight seals. (3-30-07)

ii. Controls. The motor control center shall be located outside the wet well, be readily accessible, and be protected by a conduit seal or other appropriate measures to prevent the atmosphere of the wet well from gaining access to the control center. The seal shall be located so that the motor may be removed and electrically disconnected without disturbing the seal. When such equipment is exposed to weather, it is recommended that it meet the requirements of weatherproof equipment NEMA 3R or 4. (3-30-07)

iii. Power Cord. Pump motor power cords shall be designed for flexibility and serviceability under conditions of extra hard usage. Ground fault interruption protection shall be used to de-energize the circuit in the event of any failure in the electrical integrity of the cable. Power cord terminal fittings shall be corrosion-resistant and constructed in a manner to prevent the entry of moisture into the cable, shall be provided with strain relief appurtenances, and shall be designed to facilitate field connecting. (3-30-07)

04. Alarm Systems. Audio-visual alarm systems with a backup power source shall be provided for pumping stations. The alarm shall be activated in cases of wet well high water levels and shall be visible from the outside of the structure. (5-8-09)

05. Emergency Operation. The pumping station must be sized to allow for one (1) day's flow between the high water alarm and the building service invert or the pressure discharge pipe, whichever is closer to the high water alarm. (5-8-09)

06. Instructions and Equipment. Wastewater pumping stations shall be supplied with a complete set of operational instructions, including emergency procedures, maintenance schedules, tools, and such spare parts as may be necessary. (3-30-07)

07. Operation and Maintenance. An operation and maintenance manual shall be submitted to and approved by the Department as required by Section 425. Adherence to the terms of this approved manual shall be required. The owner shall be responsible for maintaining the wastewater facility in a manner that assures its designed operation. (3-30-07)

08. Force Mains. (3-30-07)

a. Velocity and Diameter. At design pumping rates, a cleansing velocity of at least two (2) feet per second shall be maintained. (3-30-07)

b. Special Construction. Force main construction near streams or water works structures and at water main crossings shall meet applicable provisions of Section 430. (3-30-07)

c. Design Friction Losses. (3-30-07)

i. Friction Coefficient. Friction losses through force mains shall be based on the Hazen and Williams formula or other acceptable methods. When the Hazen and Williams formula is used, the friction losses for varying values of "C" shall be evaluated for different types and ages of pipe. (3-30-07)

ii. Maximum Power Requirements. When initially installed, force mains will have a significantly higher "C" factor. The effect of the higher "C" factor shall be considered in calculating maximum power requirements and duty cycle time to prevent damage to the motor. The effects of higher discharge rates on selected pumps and downstream facilities shall also be considered. (3-30-07)

d. Identification. Where force mains are constructed of material which might cause the force main to be confused with potable water mains, the force main shall be appropriately identified using trench tape saying "raw sewage," "biohazard," or other appropriate wording. (3-30-07)

e. Leakage Testing. Leakage tests shall be specified including testing methods and leakage limits. Testing shall conform with Sections 401.3.6 and 505.3.3 of the "Idaho Standards for Public Works Construction," incorporated by reference into these rules at Section 004. (3-30-07)

f. Thrust Blocking. Thrust blocking shall conform with Sections 401.3.4 of the "Idaho Standards for Public Works Construction," incorporated by reference into these rules at Section 004. (3-30-07)

g. Maintenance Considerations. Isolation valves shall be used if force mains connect into a common force main. (3-30-07)

h. Cover. Force mains shall be covered with sufficient earth or other insulation to prevent freezing or other physical damage. (3-30-07)

442. – 449. (RESERVED).

450. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES - WASTEWATER TREATMENT FACILITIES - GENERAL.

01. Plant Location. (3-30-07)

a. General. The preliminary engineering report or facility plan shall include a detailed discussion for new facilities regarding site selection criteria and alternatives considered. See Sections 410 and 411. (5-8-09)

b. Flood protection. The treatment plant structures, electrical, and mechanical equipment shall be protected from physical damage by the one hundred (100) year flood. Treatment plants shall be designed to remain

fully operational and accessible during the one hundred (100) year flood. This requirement applies to new construction and to existing facilities undergoing major modification. Local, state and federal flood plain regulations shall be considered. (3-30-07)

c. Setback distances. Facilities open to the atmosphere such as lagoons, open clarifiers, open aeration basins, and other such facilities shall be placed a minimum of two hundred (200) feet from residential property lines. If such open facilities are adjacent to property zoned as commercial or industrial, a lesser setback will be considered by the Department on a case by case basis. For totally enclosed facilities with noise and odor controls, the minimum setback shall be fifty (50) feet if approved by the Department. Neighboring property owners may grant long term easements or other types of legal documents tied to the land to allow for similar setbacks from future development or public use. (5-8-09)

02. Quality of Effluent. The required degree of wastewater treatment shall be based on the effluent requirements and water quality standards established by the responsible state agency and appropriate federal regulations including discharge permit requirements. Combined sewer overflows are not allowed. (5-8-09)

03. Design. (3-30-07)

a. Type of Treatment. The preliminary engineering report or facility plan shall include a detailed discussion regarding criteria and alternatives considered in selection of the appropriate type of treatment. See Sections 410 and 411. The plant design shall provide the necessary flexibility to perform satisfactorily within the expected range of waste characteristics and volumes. (5-8-09)

b. Required Engineering Data for New Process and Application Evaluation. The policy of the Department is to encourage rather than obstruct the development of any valid methods or equipment for treatment of wastewater. The lack of inclusion in these standards of some types of wastewater treatment processes or equipment should not be construed as precluding their use. The Department may approve other types of wastewater treatment processes and equipment that meet the performance standards set forth in these rules under the condition that the operational reliability and effectiveness of the process or device shall have been demonstrated under similar conditions with a suitably-sized unit operating at its design load conditions, to the extent required. To determine that such new processes and equipment or applications have a reasonable and substantial chance of success, the Department may require the following: (3-30-07)

i. Monitoring observations, including test results and engineering evaluations, demonstrating the efficiency of such processes. (3-30-07)

ii. Detailed description of the test methods. (3-30-07)

iii. Testing, including appropriately-composited samples, under various ranges of strength and flow rates (including diurnal variations) and waste temperatures over a sufficient length of time to demonstrate performance under climatic and other conditions which may be encountered in the area of the proposed installations. (3-30-07)

iv. Other appropriate information. The Department may require that appropriate testing be conducted and evaluations be made under the supervision of a competent process engineer other than those employed by the manufacturer or developer. (3-30-07)

c. Design period. The design period shall be clearly identified in the preliminary engineering report or facility plan as required in Sections 410 and 411. (5-8-09)

d. Design Loads. (3-30-07)

i. Hydraulic Design. (3-30-07)

(1) Critical Flow Conditions. Flow conditions critical to the design of the treatment plant shall be as described in the preliminary engineering report required by Section 411. Initial low flow conditions must be evaluated in the design to minimize operational problems with freezing, septicity, flow measurements and solids

dropout. The appropriate design flows must be considered in evaluating unit processes, pumping, piping, etc.

(5-8-09)

(2) **Treatment Plant Design Capacity.** The treatment plant design capacity shall be as described in Section 411. The plant design flow selected shall meet the appropriate effluent and water quality standards that are set forth in the discharge or other appropriate permit. For plants subject to high wet weather flows or overflow detention pump-back flows, the design maximum flows that the plant is to treat on a sustained basis shall be specified.

(3-30-07)

(3) **Flow Equalization.** Facilities for the equalization of flows and organic shock load shall be considered at all plants which are critically affected by surge loadings.

(3-30-07)

ii. **Organic Design.** Organic loadings for wastewater treatment plant design shall be based on the information provided in the preliminary engineering report required by Section 411. The effects of septage flow which may be accepted at the plant shall be given consideration and appropriate facilities shall be included in the design. See Section 520.

(5-8-09)

iii. **Shock Effects.** The shock effects of high concentrations and diurnal peaks for short periods of time on the treatment process, particularly for small treatment plants, shall be considered.

(3-30-07)

e. **Conduits.** All piping and channels shall be designed to carry the maximum expected flows. Conduits shall be designed to avoid creation of pockets and corners where solids can accumulate.

(3-30-07)

f. **Gates or Valves.** Suitable gates or valves shall be placed in channels to seal off unused sections which might accumulate solids. The use of shear gates, stop plates or stop planks is permitted where they can be used in place of gate valves or sluice gates. Non-corrodible materials shall be used for control gates and conduits.

(3-30-07)

g. **Arrangement of Units.** Component parts of the plant shall be arranged for appropriate operating and maintenance convenience, flexibility, economy, continuity of maximum effluent quality, and ease of installation of future units.

(3-30-07)

h. **Flow Division Control.** Flow division control facilities shall be provided as necessary to ensure organic and hydraulic loading control to plant process units and shall be designed for easy operator access, change, observation, and maintenance. Appropriate flow measurement facilities shall be incorporated in the flow division control design.

(3-30-07)

i. **Odor Management.** An odor management plan shall be submitted to and approved by the Department as a part of the preliminary engineering report described in Section 411. The Water Environment Federation Guidance referenced in Section 008 of these rules provides guidance for use in developing an odor management plan that is inclusive of the facilities being designed.

(5-8-09)

j. **Cold Weather.** Facilities shall be designed with regard for proper operation and maintenance and protection during cold weather temperatures expected at the specific location. The Water Environment Federation Guidance referenced in Section 008 of these rules provides guidance for use in designing, operating and maintaining facilities in cold weather.

(3-30-07)

04. Plant Details.

(3-30-07)

a. Unit Bypasses.

(3-30-07)

i. **Removal from Service.** Properly located and arranged bypass structures and piping shall be provided so that each unit of the plant can be removed from service independently. The bypass design shall facilitate plant operation during unit maintenance and emergency repair so as to minimize deterioration of effluent quality and ensure rapid process recovery upon return to normal operational mode. The actuation of all bypasses shall require manual action by operating personnel. All power-actuated bypasses shall be designed to permit manual operation in the event of power failure.

(3-30-07)

ii. Unit Bypass During Construction. Unit bypassing during construction shall be in accordance with the preliminary engineering report required by Section 411. (5-8-09)

b. Unit dewatering, flotation protection, and plugging. Drains or sumps shall be provided to completely dewater each unit to an appropriate point in the process. Due consideration shall be given to the possible need for hydrostatic pressure relief devices to prevent flotation of structures. Pipes subject to plugging shall be provided with means for mechanical cleaning or flushing. (3-30-07)

c. Construction materials. Materials shall be selected that are appropriate under conditions of exposure to hydrogen sulfide and other corrosive gases, greases, oils, and other constituents frequently present in wastewater. This is particularly important in the selection of metals and paints. (3-30-07)

d. Painting. The contents and direction of flow shall be identified on the piping in a contrasting color. (3-30-07)

e. Operating equipment. Tools, accessories, and spare parts necessary for the plant operator's use shall be provided. (3-30-07)

f. Storage and work space facilities. Readily accessible storage and work space facilities shall be provided, and consideration shall be given to provision of a garage for large equipment storage, maintenance, and repair. (3-30-07)

g. Erosion control during construction. Effective site erosion control shall be provided during construction. (3-30-07)

h. Grading and landscaping. Upon completion of the plant, the ground shall be graded and landscaped in accordance with the preliminary engineering report developed in the preliminary engineering report required by Section 411. (5-8-09)

05. Plant Outfalls. (3-30-07)

a. Discharge impact control. The outfall shall be designed to discharge to the receiving stream in a manner acceptable to various reviewing authorities including, but not limited to, EPA, the Idaho Department of Environmental Quality, U.S. Army Corp of Engineers, Idaho Department of Water Resources, and local jurisdictions. (3-30-07)

b. Protection and Maintenance. The outfall shall be so constructed and protected against the effects of floodwater, ice, or other hazards as to reasonably ensure its structural stability and freedom from stoppage. Hazards to navigation shall be considered in designing outfalls. (3-30-07)

c. Sampling Provisions. All outfalls shall be designed so that a sample of the effluent can be obtained at a point after the final treatment process and before discharge to or mixing with the receiving waters. (3-30-07)

06. Essential Facilities. (3-30-07)

a. Emergency Power Facilities. (3-30-07)

i. General. All wastewater treatment plants shall be provided with an alternate source of electric power or pumping capability to allow continuity of operation during power failures. Refer to Subsection 440.07.c. for design requirements. Methods of providing alternate sources include: (3-30-07)

(1) The connection of at least two (2) independent power sources such as substations. A power line from each substation is required if this method is used. The determination of the independent power sources shall be done by the appropriate power provider and stated in a letter from that provider. (3-30-07)

(2) In-place internal combustion engine equipment which will generate electrical or mechanical

energy. (3-30-07)

(3) Portable pumping equipment when only emergency pumping is required. Where part or all of the engine-driven pumping equipment is portable, adequate emergency storage capacity with alarm system shall be provided to allow time for detection of pump station failure and transportation and hookup of the portable equipment. (3-30-07)

ii. Power for Aeration. Standby generating capacity normally is not required for aeration equipment used in the activated sludge process. In cases where a history of chronic, long-term (four (4) hours or more) power outages have occurred, auxiliary power for minimum aeration of the activated sludge will be required as provided in Subsections 450.06.a.i.(1) or 450.06.a.i.(2). (5-8-09)

iii. Power for Disinfection. Standby generating capacity, as provided in Subsections 450.06.a.i.(1) or 450.06.a.i.(2), is required for disinfection facilities and dechlorination facilities. (3-30-07)

b. Water Supply. Section 009 provides a reference to the Uniform Plumbing Code, compliance with which may be required by other law. (3-30-07)

c. Sanitary Facilities. Section 009 provides a reference to the Uniform Plumbing Code, compliance with which may be required by other law. (3-30-07)

d. Stairways. Stairways shall be installed in lieu of ladders for top access to units requiring routine inspection and maintenance (such as digesters, trickling filters, aeration tanks, clarifiers, tertiary filters, etc.). (3-30-07)

e. Flow Measurement. (3-30-07)

i. Location. Flow measurement devices shall be provided to measure the following flows: (5-8-09)

(1) Plant influent or effluent flow. (3-30-07)

(2) If influent flow is significantly different from effluent flow, both shall be measured or otherwise accounted for by other flow measurement facilities. (3-30-07)

(3) Other flows required to be monitored under the provisions of the discharge permit. (3-30-07)

(4) Other flows such as return activated sludge, waste activated sludge, and recycle required for plant operational control. (3-30-07)

ii. Devices. Indicating, totalizing, and recording flow measurement devices for all influent or effluent flows shall be provided for all plants. Any other flow measurement device may be indicating and totalizing only. All flow measurement equipment must be sized to function to a satisfactory level of accuracy over the full range of flows expected and shall be protected against freezing. (5-8-09)

iii. Hydraulic Conditions. Flow measurement equipment including approach and discharge conduit configuration and critical control elevations shall be designed to ensure the required hydraulic conditions necessary for the measurement accuracy needed for the specific application. (3-30-07)

iv. Calibration and Certification. The flow measurement devices specified in Subsections 450.06.e.i.(1) through 450.06.e.i.(3) shall be calibrated and certified at manufacturer-specified frequencies. (5-8-09)

f. Sampling Equipment. Effluent composite sampling equipment shall be provided at all mechanical plants and at other facilities where necessary to meet discharge permit monitoring requirements. Composite sampling equipment shall also be provided as needed for influent sampling and for monitoring plant operations. The influent sampling point shall be located prior to any process return flows. (3-30-07)

07. Safety. (3-30-07)

a. General. Provisions shall be made to consider the protection of maintenance personnel and visitors from typical and foreseeable hazards in accordance with the engineering standards of care. Enclosure of the plant site with a fence and signs designed to discourage the entrance of unauthorized persons and animals is required. (3-30-07)

b. Hazardous Chemical Handling. The materials utilized for storage, piping, valves, pumping, metering, splash guards, etc., shall be specially selected considering the physical and chemical characteristics of each hazardous or corrosive chemical. (3-30-07)

08. Laboratory. (3-30-07)

a. All treatment plants shall include a laboratory for making the necessary analytical determinations and operating control tests, except for those plants utilizing only processes not requiring laboratory testing for plant control and where satisfactory off-site laboratory provisions are made to meet the permit monitoring requirements. The laboratory shall have sufficient size, bench space, equipment, and supplies to perform all self-monitoring analytical work required by discharge permits, and to perform the process control tests necessary for good management of each treatment process included in the design. (3-30-07)

b. Treatment plant laboratory needs may be divided into the following three (3) general categories: (3-30-07)

i. Plants performing only basic operational testing; this typically includes pH, temperature, dissolved oxygen, and chlorine residual. (3-30-07)

ii. Plants performing more complex operational and permit laboratory tests including biochemical oxygen demand, suspended solids, and fecal coliform analysis. (3-30-07)

iii. Plants performing more complex operational, permit, industrial pretreatment, and multiple plant laboratory testing. (3-30-07)

c. Expected minimum laboratory needs for the three (3) plant classifications set out in Subsection 450.08.b. must be addressed in the preliminary engineering report. (5-8-09)

09. Instructions and Equipment. Wastewater treatment equipment shall be supplied with a complete set of operational instructions, including emergency procedures, maintenance schedules, tools and such spare parts as may be necessary. (3-30-07)

10. Operation and Maintenance. An operation and maintenance manual shall be submitted to and approved by the Department as required by Section 425. Adherence to the terms of this approved manual shall be required. The owner shall be responsible for maintaining the wastewater facility in a manner that assures its designed operation. (3-30-07)

451. -- 454. (RESERVED).

455. PRIVATE MUNICIPAL WASTEWATER TREATMENT PLANTS.

01. Scope. Section 455 includes additional requirements for approval of private municipal wastewater treatment plants. Individual extended treatment package systems for on-site systems are not covered by these rules, but are covered by IDAPA 58.01.03, "Individual/Subsurface Sewage Disposal Rules." See Technical Guidance Manual for Individual and Subsurface Sewage Disposal Systems available at http://www.deq.idaho.gov/water/assist_business/septic/tech_manual_updates.cfm. Private municipal wastewater treatment plants may be considered if no other viable alternative is available. (5-8-09)

02. Preliminary Engineering Report. A preliminary engineering report as described in Section 411 must be submitted to the Department for review and must be approved by the Department prior to submittal of plans

and specifications. The preliminary engineering report for private municipal wastewater treatment plants shall include the information listed in Subsections 455.02.a. and 455.02.b., as well as information specified in Section 411. (5-8-09)

- a. The preliminary engineering report shall evaluate the following alternatives: (5-8-09)
 - i. Wastewater treatment plants (possibly several technologies). (5-8-09)
 - ii. Self-contained lagoon. (3-30-07)
 - iii. Conventional septic tank and drainfield (or alternate drainfield design). (3-30-07)
 - iv. Surface water discharge including impact on TMDLs. (3-30-07)
 - v. Gravity or pressure sewer into nearby community (see Subsection 455.04.e. for distances to community systems and required hook-up.) (5-8-09)
 - vi. Recirculating or intermittent sand filter. (3-30-07)
 - vii. Annual operation and maintenance costs. (3-30-07)
 - viii. Land application/reuse. (3-30-07)
- b. The preliminary engineering report must thoroughly analyze the effect of the treatment plant discharge on ground water quality, especially bacteria, viruses, phosphorus and nitrates as compared to the alternatives listed in Subsection 455.02.a. (5-8-09)

03. Plan and Specification Approval. (3-30-07)

- a. Plans and specifications for the collection and treatment systems will not be approved until the owner is in receipt of one of the following (whichever is applicable): (3-30-07)
 - i. A draft NPDES permit from EPA for proposed surface water discharges; or (5-8-09)
 - ii. A draft wastewater land application/reuse permit from the Department for proposed land application or reuse of the effluent. See the Guidance for Reclamation and Reuse of Municipal and Industrial Wastewater, http://www.deq.idaho.gov/water/permits_forms/permitting/guidance.cfm. (5-8-09)
- b. For a subsurface treatment and dispersal system (SSDS): (5-8-09)
 - i. The plans and specifications for the dispersal system must receive approval from the Department prior to receipt of the SSDS permit from the district health department having jurisdiction; and (5-8-09)
 - ii. The plans and specifications for the collection system will not be approved by the Department until the owner is in receipt of the SSDS permit from the district health department having jurisdiction. (5-8-09)
- c. For private municipal wastewater treatment plants storing their treated effluent prior to irrigation or surface water discharge, the following additional items shall be considered by the Department, prior to approving either the treatment systems or the disposal option. These include, but are not limited to, sealing of storage ponds, filtration and disinfection requirements prior to use or discharge, the degree of treatment, and the intended type and area of irrigation. See IDAPA 58.01.17, "Rules for the Reclamation and Reuse of Municipal and Industrial Wastewater." (5-8-09)

04. Private Municipal Wastewater Treatment Plants. (5-8-09)

- a. The private municipal wastewater treatment plant shall have at least two (2) full years of operating data on five (5) separate installations in the United States. The data submittal shall include the name, address, and

telephone number for a regulatory agency contact person familiar with the performance of each reported installation. (5-8-09)

b. The owner shall provide for a wastewater system operator in responsible charge of the facility. The operator license classification requirement will depend on the classification of the system based on Section 202 and the licensure requirements of Section 203. If the operator is provided by contract, the contract shall be submitted to the Department for review and approval. (5-8-09)

c. A sludge management plan must be submitted to and approved by the Department. The plan must include collection, treatment and disposal of the sludge. Additionally, a signed contract that provides for ultimate legal disposal of the sludge shall be submitted to the Department prior to plan and specification approval. (3-30-07)

d. The private municipal wastewater treatment plant shall be a dual train type (or equivalent/greater) with redundant pumps and blowers from influent works to the disposal site and provide sufficient redundancy to continue processing incoming wastewater at peak flows while any one (1) component or process is out of service. Standby or emergency power shall be provided to fully operate the wastewater treatment plant during a power outage unless the water system would also be out during a power outage. (5-8-09)

e. A compliance agreement schedule authorized by Section 39-116A, Idaho Code, shall be required for each private municipal wastewater treatment plant approved unless specifically waived by the Department in writing. If a private municipal wastewater treatment plant installation is only a temporary or interim measure in a long-term plan, a compliance agreement schedule will include a sunset clause with a date for the private municipal wastewater treatment plant to cease operation and will require the plant owner to fund and construct the eventual hookup to the public municipal wastewater collection system when the system becomes reasonably accessible. The compliance agreement schedule shall address such things as operation and maintenance requirements and monitoring, reporting requirements, and other project-specific items as applicable. The owner shall be responsible for complying with the requirements of the compliance agreement schedule. The compliance agreement schedule must be renewed every five (5) years; when ownership of the treatment plant changes; or at the request of the owner(s) or Department, so long as the system is in operation. (5-8-09)

f. If the Department determines that a proposed private municipal wastewater treatment plant is reasonably accessible to a public municipal wastewater collection system, the use of the private municipal wastewater treatment plant may be denied. (5-8-09)

g. **Minimum Size.** The minimum size of a private municipal wastewater treatment plant allowed under these rules is twenty-five thousand (25,000) gallons per day design capacity based on average day flows. (5-8-09)

i. The minimum size requirements do not apply to proposed systems with suitably configured passive wastewater treatment technologies including, but not limited to, facultative lagoons, free water surface wetlands, and vegetated submerged beds. (5-8-09)

ii. The Department may approve private municipal wastewater treatment plants smaller than twenty-five thousand (25,000) gallons per day design capacity, based on average day flows, provided the treatment plant will be maintained under original ownership. (5-8-09)

iii. For the Department to approve the transfer of ownership of a private municipal wastewater treatment plant smaller than twenty-five thousand (25,000) gallons per day design capacity, based on average day flows, to another entity, the technical, financial, and managerial requirements in Section 409 must be demonstrated by the proposed new owner. (5-8-09)

05. Private Municipal Wastewater Treatment Plants with Drainfields. In addition to the applicable requirements of these rules, the subsurface sewage disposal design, construction and operation shall comply with IDAPA 58.01.03, "Individual/Subsurface Sewage Disposal Rules." The exception to this is for Class A reclaimed wastewater reuse facilities that discharge to the subsurface. These reuse facilities are regulated by IDAPA 58.01.17, "Rules for the Reclamation and Reuse of Municipal and Industrial Wastewater." (5-8-09)

456. -- 459. (RESERVED).

460. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES - SCREENING AND GRIT REMOVAL.

01. Screening Devices and Comminutors. (3-30-07)

a. Screening, coarse or fine, or comminutors shall be required for all mechanical plants and shall be addressed for other types of plants. These facilities shall be designed for peak hourly flow. Multiple channels shall be provided and equipped with the necessary gates to isolate flow from any screening unit. Provisions shall also be made to facilitate dewatering each unit. The channel preceding and following the screen shall be shaped to minimize settling of solids. (3-30-07)

b. For mechanical plants with design average flow less than one million gallons per day (1 mgd), and where a single mechanically cleaned screen is used, an auxiliary manually cleaned screen shall be provided. Where two (2) or more mechanically cleaned screens are used, the design shall provide for taking any unit out of service without sacrificing the capability to screen the design peak instantaneous flows. (3-30-07)

02. Grit Removal Facilities. Grit removal and handling facilities shall be provided for all mechanical wastewater treatment plants. Consideration shall be given to possible damaging effects on pumps, comminutors, and other preceding equipment, and the need for additional storage capacity in treatment units where grit is likely to accumulate. (3-30-07)

461. -- 469. (RESERVED).

470. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES - SETTLING.

01. General. (3-30-07)

a. Where settling is being used, a minimum of two (2) units capable of independent operation are desirable and shall be provided in all plants where design average flows exceed one hundred thousand (100,000) gallons/day. Plants not having multiple units shall include other provisions to assure continuity of treatment. (3-30-07)

b. The design of settling facilities shall include a minimum of two (2) units with flow splitting. Sizing shall be calculated for both design average and design peak hourly flow conditions, and the larger surface area determined shall be used. (3-30-07)

c. The plant design shall allow for isolation of each unit. The plant design shall allow for sludge and scum removal. (3-30-07)

d. Baffling shall be designed to control solids carry-over. (3-30-07)

e. The minimum side depth for primary settling facilities shall be ten (10) feet. (3-30-07)

f. The minimum side depth for secondary settling facilities shall be twelve (12) feet. (3-30-07)

471. -- 479. (RESERVED).

480. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES - SLUDGE PROCESSING, STORAGE, AND DISPOSAL.

01. Facilities. Facilities for processing sludge shall be provided for all mechanical wastewater treatment plants. Facilities shall be capable of processing sludge to a form suitable for ultimate disposal. Final disposal or utilization shall be in accordance with applicable permit and federal regulations. (3-30-07)

02. Design. Sludge processing, storage and disposal facility design shall comply with the sludge management plan in the Preliminary Engineering Report. (3-30-07)

03. Multiple Units. Multiple units capable of independent operation are desirable and shall be provided in all plants where design average flows exceed one hundred thousand (100,000) gallons/day. Plants not having multiple units shall include other provisions to assure continuity of treatment. The plant design shall allow for isolation of each unit. (3-30-07)

481. -- 489. (RESERVED).

490. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES - BIOLOGICAL TREATMENT.

If biological treatment is used, the process shall be determined in the preliminary engineering report. The choice shall be based on influent characteristics and effluent requirements. (5-8-09)

01. Trickling Filters. (3-30-07)

a. General. Trickling filters shall be preceded by effective settling tanks equipped with scum and grease collecting devices or other suitable pretreatment facilities. (3-30-07)

b. Hydraulics. The flow will be uniformly distributed across the surface of the media. The piping system, including dosing equipment and distributor, shall be designed to provide capacity for the design peak hour flow, including recirculation. (5-8-09)

c. Media. (3-30-07)

i. Quality. The media shall be appropriate for the wastewater and shall be of sufficient strength to support itself under design loading and build up of biomass. (3-30-07)

ii. Depth. Trickling filter media shall have a minimum depth of six (6) feet above the underdrains. (3-30-07)

d. Underdrainage System. (3-30-07)

i. Arrangement. Underdrains shall be provided and the underdrainage system shall cover the entire floor of the filter. Inlet openings into the underdrains shall have an unsubmerged gross combined area equal to at least fifteen (15) percent of the surface area of the filter. (3-30-07)

ii. Ventilation. The underdrainage system, effluent channels, and effluent pipe shall be designed to permit free passage of air. (3-30-07)

e. Special Features. (3-30-07)

i. Maintenance. All distribution devices, underdrains, channels, and pipes shall be installed so that they may be properly maintained, flushed or drained. (3-30-07)

ii. Winter Protection. Covers shall be provided to maintain operation and treatment efficiencies when climatic conditions are expected to result in problems due to cold temperatures. (3-30-07)

iii. Recirculation. The piping system shall be designed for recirculation as required to achieve the design efficiency. The recirculation rate shall be variable and subject to plant operator control at the range of 0.5:1 up to 4:1 (ratio of recirculation rate versus design average flow). A minimum of two (2) recirculation pumps shall be provided. (3-30-07)

f. Rotary Distributor Seals. Mercury seals shall not be permitted. (3-30-07)

g. Unit Sizing. Required volumes of filter media shall be based upon pilot testing with the particular

wastewater or any of the various empirical design equations that have been verified through actual full scale experience. Such calculations must be submitted to the Department if pilot testing is not utilized. Trickling filter sizing design shall consider peak organic load conditions including the oxygen demands due to solids and process recycle flows. (3-30-07)

02. Activated Sludge. (3-30-07)

a. Aeration. (3-30-07)

i. Capacities and Permissible Loadings. The size of the aeration tank for any particular adaptation of the process shall be determined by full scale experience, pilot plant studies, or rational calculations based mainly on solids retention time, food to microorganism ratio, and mixed liquor suspended solids levels. Other factors, such as size of treatment plant, diurnal load variations, and degree of treatment required, shall also be considered. In addition, temperature, alkalinity, pH, and reactor dissolved oxygen shall be considered when designing for nitrification. Calculations shall be submitted to the Department in the preliminary engineering report to justify the basis for design of aeration tank capacity. (5-8-09)

ii. Arrangement of Aeration Tanks. (3-30-07)

(1) Dimensions. The dimensions of each aeration tank or return sludge reaeration tank shall be such as to maintain effective mixing and utilization of air. An exception is that horizontally mixed aeration tanks shall have a depth of not less than five point five (5.5) feet. (3-30-07)

(2) Number of Units. Total aeration tank volume plus redundancy requirements shall be divided among two (2) or more equal units, capable of independent operation. (3-30-07)

(3) Inlets and Outlets. (3-30-07)

(a) Controls. Inlets and outlets for each aeration tank unit shall be designed to control flow to any unit with reasonable accuracy and to maintain reasonably constant liquid level. The properties of the system shall permit the design peak day flow to be treated with any single aeration tank unit out of service. The properties of the system shall permit the design peak hour hydraulic flow to be carried with any single aeration tank unit out of service. (3-30-07)

(b) Conduits. Channels and pipes carrying liquids with solids in suspension shall be designed to be self-cleansing. (3-30-07)

(c) Scum and Foam Control. Aeration tanks shall be designed to include adequate control or removal of scum and foam. (3-30-07)

(4) Freeboard. All aeration tanks should have a freeboard of not less than eighteen (18) inches. (3-30-07)

iii. Aeration Equipment. (3-30-07)

(1) General. Oxygen requirements generally depend on maximum diurnal organic loading, degree of treatment, and level of suspended solids concentration to be maintained in the aeration tank mixed liquor. Aeration equipment shall be capable of maintaining a minimum of two point zero (2.0) mg/L of dissolved oxygen in the mixed liquor at all times and provide thorough mixing of the mixed liquor (for a horizontally mixed aeration tank system, an average velocity of one (1) foot per second must be maintained). In the absence of experimentally determined values, the design oxygen requirements for all activated sludge processes shall be 1.1 lb O₂ per lb of design peak hour BOD₅ applied to the aeration tanks, with the exception of the extended aeration process, for which the value shall be one point five (1.5) to include endogenous respiration requirements. (5-8-09)

(a) Where nitrification is required or will occur, the oxygen requirement for oxidizing ammonia must be added to the above requirement for carbonaceous BOD₅ removal and endogenous respiration requirements. The nitrogenous oxygen demand (NOD) shall be taken as four point six (4.6) times the diurnal peak hour total Kjeldahl

nitrogen content of the aeration tank influent. In addition, the oxygen demands due to recycle flows must be considered due to the high concentrations of BOD₅ and total Kjeldahl nitrogen associated with such flows.

(5-8-09)

(b) Meet maximum oxygen demand and maintain process performance with the largest unit out of service. Provide for varying the amount of oxygen transferred in proportion to the load demand on the plant.

(3-30-07)

(2) Diffused Air Systems. Air requirements including, but not limited to, process air, channel aeration, aerobic digestion, and miscellaneous plant air shall be submitted to the Department in the preliminary engineering report. Blowers shall be provided in multiple units, so arranged and in such capacities as to meet the maximum air demand with the single largest unit out of service. The design shall also provide for varying the volume of air delivered in proportion to the load demand of the plant. Aeration equipment shall be easily adjustable in increments and shall maintain solids suspension within these limits.

(5-8-09)

(3) Mechanical Aeration Systems.

(3-30-07)

(a) Oxygen Transfer Performance. The mechanism and drive unit shall be designed for the expected conditions in the aeration tank in terms of the power performance. Certified testing shall be provided to verify mechanical aerator performance. Refer to applicable provisions of Subsection 490.02. In the absence of specific design information, the oxygen requirements shall be calculated for mechanical aeration systems using a transfer rate not to exceed two (2) pounds of oxygen per horsepower per hour in clean water under standard test conditions. Design transfer efficiencies shall be included in the specifications.

(3-30-07)

(b) Design Requirements. Motors, gear housing, bearings, grease fittings, etc., shall be easily accessible and protected from inundation and spray as necessary for proper functioning of the unit.

(3-30-07)

(c) Winter Protection. Where extended cold weather conditions occur, the aerator mechanism and associated structure shall be protected from freezing due to splashing. Due to high heat loss, subsequent treatment units shall be protected from freezing.

(3-30-07)

b. Non-Aerated Tanks or Zones. Non-aerated tanks or zones within aeration tanks shall have mixing equipment adequate to fully mix the contents. Provide calculations in the preliminary engineering report for sizing of this equipment.

(5-8-09)

c. Return Sludge Equipment.

(3-30-07)

i. Return Sludge Rate. The return sludge rate of withdrawal from the final settling tank is a function of the concentration of suspended solids in the mixed liquor entering it, the sludge volume index of these solids, and the length of time these solids are retained in the settling tank. The rate of sludge return shall be varied by means of adjustable weirs, variable speed pumps, or timers (small plants) to pump sludge.

(3-30-07)

ii. Return Sludge Pumps. If a consolidated return sludge pump facility is used, the maximum return sludge capacity shall be obtained with the largest pump out of service. If individual sludge pumps are used at each settling basin, the pumps shall be designed to facilitate their rapid removal and replacement with a standby unit stored at the treatment plant site. If air lifts are used for returning sludge from each settling tank hopper, no standby unit will be required provided the design of the air lifts facilitate their rapid and easy cleaning and provided other suitable standby measures are made available. Air lifts should be at least three (3) inches in diameter.

(3-30-07)

iii. Return Sludge Piping. Discharge piping should be at least four (4) inches in diameter and shall be designed to maintain a velocity of not less than two (2) feet per second when return sludge facilities are operating at normal return sludge rates. Suitable devices for observing, sampling, and controlling return activated sludge flow from each settling tank hopper shall be provided.

(3-30-07)

iv. Waste Sludge Facilities. Means for observing, measuring, sampling, and controlling waste activated sludge flow shall be provided.

(3-30-07)

d. Sequencing Batch Reactors. The fill and draw mode of the activated sludge process commonly termed the Sequencing Batch Reactor may be used in Idaho. The design must be based on experience at other facilities and shall meet the applicable requirements under Sections 450, 470 and 490, except as modified in Subsection 490.02.d.i. through 490.02.d.xi. Continuity and reliability of treatment equal to that of the continuous flow through modes of the activated sludge process shall be provided. (3-30-07)

i. At least two (2) tanks shall be provided. (3-30-07)

ii. The decantable volume and decanter capacity of the sequencing batch reactor system with the largest basin out of service shall be sized to pass at least seventy-five (75) percent of the design maximum day flow without changing cycle times. A decantable volume of at least four (4) hours with the largest basin out of service based on one hundred (100) percent of the design maximum day flow is permissible. (3-30-07)

iii. System reliability with any single tank unit out of service and the instantaneous delivery of flow shall be evaluated in the design of decanter weirs and approach velocities. (3-30-07)

iv. Reactor design shall provide for scum removal and prevent overflow of settled solids. (3-30-07)

v. An adequate zone of separation between the sludge blanket and the decanter(s) shall be maintained throughout the decant phase. Decanters which draw the treated effluent from near the water surface throughout the decant phase are recommended. (3-30-07)

vi. Solids management to accommodate basin dewatering shall be considered. (3-30-07)

vii. The blowers shall be provided in multiple units, so arranged and in such capacities as to meet the maximum air demand in the oxic portions of the fill/react and react phases of the cycle with the single largest unit out of service. See Subsection 490.02. (3-30-07)

viii. Mechanical mixing independent of aeration shall be provided for all systems where biological phosphorus removal or denitrification is required. (3-30-07)

ix. Flow paced composite sampling equipment and continuous turbidity metering for separately monitoring the effluent quality from each basin may be required by the regulatory agency. All twenty-four (24) hour effluent quality composite samples for compliance reporting or monitoring plant operations shall be flow-paced and include samples collected at the beginning and end of each decant phase. (3-30-07)

x. A programmable logic controller (PLC) shall be provided. Multiple PLCs shall be provided as necessary to assure rapid process recovery or minimize the deterioration of effluent quality from the failure of a single controller. An uninterruptible power supply with electrical surge protection shall be provided for each PLC to retain program memory (i.e., process control program, last-known set points and measured process/equipment status, etc.) through a power loss. A hard-wired backup for manual override shall be provided in addition to automatic process control. Both automatic and manual controls shall allow independent operation of each tank. In addition, a fail-safe control allowing at least twenty (20) minutes of settling between the react and decant phases shall be provided. The fail-safe control shall not be adjusted by the operator. (3-30-07)

xi. A sufficient quantity of spare parts shall be on hand. Consideration shall be given to parts with a low mean time between failure such as electrical relays and solid state electronics. (5-8-09)

03. Other Biological Systems. (3-30-07)

a. General. Biological treatment processes not included in these rules shall be considered in accordance with Subsection 450.03. (3-30-07)

b. Membrane Bioreactors. Details for Membrane Bioreactor (MBR) plants shall be submitted and approved in the preliminary engineering report. In addition to the requirements of Section 411, details shall include plant layout, calculations for hydraulic capacity and air required, membrane technology considered and membrane type and model selected, results from similar type MBR plants already in operation, and anticipated sludge

production. (5-8-09)

491. -- 492. (RESERVED).

493. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES - WASTEWATER LAGOONS.

01. General. (3-30-07)

a. These rules pertain to all new and existing municipal wastewater lagoons, including discharging or non-discharging lagoons, municipal wastewater treatment lagoons, municipal wastewater storage lagoons, and any other municipal wastewater lagoons that, if leaking, have the potential to degrade waters of the state. Lagoons are also sometimes referred to as ponds. Section 493 does not apply to industrial lagoons or mining tailings ponds, single-family dwellings utilizing a single lagoon, two (2) cell infiltrative system, those animal waste lagoons excluded from review under Section 39-118, Idaho Code, or storm water ponds. (3-30-07)

b. Lagoons utilized for equalization, percolation, evaporation, and sludge storage do not have to meet the requirements set forth in Subsections 493.05 through 493.10, but must comply with all other applicable subsections. (3-30-07)

02. Seepage Testing Requirements. (5-8-09)

a. Existing Lagoons. All existing lagoons covered under these rules shall be seepage tested by an Idaho licensed professional engineer, an Idaho licensed professional geologist, or by individuals under their supervision by April 15, 2012 unless otherwise specified in a current permit issued by the Director. (5-8-09)

b. New Lagoons. As part of the construction process, all new lagoons must be seepage tested by an Idaho licensed professional engineer, an Idaho licensed professional geologist, or by individuals under their supervision prior to being put into service. (5-8-09)

c. Subsequent Tests. All lagoons covered under these rules must be seepage tested by an Idaho licensed professional engineer, an Idaho licensed professional geologist, or by individuals under their supervision every ten (10) years after the initial testing. (5-8-09)

d. Testing Due to Change of Conditions to Liner. Prior to being returned to service, lagoons must be seepage tested if a change of condition to the liner occurs that may affect its permeability, including but not limited to liner repair below the high water line, liner replacement, lagoon dewatering of soil-lined lagoons which results in desiccation of the soil liner, seal installation, or earthwork affecting liner integrity. A seepage test may be required after solids removal. Prior to performing activities that may affect liner permeability, the system owner must contact the Department in writing to determine if a seepage test will be required prior to returning the lagoon to service. (5-8-09)

e. Procedures for Performing a Seepage Test. The procedure for performing a seepage test or alternative analysis must be approved by the Department, and the test results must be submitted to the Department. If an existing lagoon has passed a seepage test before April 15, 2012 and submitted the results to the Department, the owner of that lagoon has ten (10) years from the date of the testing to comply with this requirement. (5-8-09)

03. Allowable Seepage Rates. (3-30-07)

a. Design Standard. Lagoons shall be designed for a maximum leakage rate of five hundred (500) gallons per acre per day. (3-30-07)

b. Operating Standard. The leakage rate for lagoons constructed after April 15, 2007 shall be no more than zero point one hundred twenty-five (0.125) inches (1/8 inch) per day, which is approximately thirty-four hundred (3400) gallons per acre per day. The leakage rate for existing lagoons constructed prior to April 15, 2007 shall be no more than zero point twenty-five (0.25) inches (1/4 inch) per day. (3-30-07)

c. For lagoons located over sensitive aquifers or near 303d listed stream segments, the leakage rate shall be no more than zero point one hundred twenty-five (0.125) inches (one-eighth (1/8) inch) per day, which is approximately thirty-four hundred (3400) gallons per acre per day. The operating standard may be considerably lower based on a ground water investigation considering fate and transport of contaminants to determine the effect of the seepage on the aquifer or stream segment and the best capability of measurement at the time of the investigation. (5-8-09)

04. Requirements for Lagoons Leaking Above the Allowable Amount. If a lagoon is found to be leaking at a rate higher than that allowed under Subsection 493.03.b., the owner of the lagoon, in accordance with a schedule negotiated with and approved by the Director, is required to: (3-30-07)

a. Repair the leak and retest for compliance; (3-30-07)

b. Re-line the lagoon and retest for compliance; (3-30-07)

c. Drain the lagoon in an approved manner and stop using the lagoon; or (3-30-07)

d. Determine the impact of the leaking lagoon on the environment based on ground water sampling and modeling. The procedure for performing ground water sampling and monitoring must be approved by the Department. Any impact must comply with IDAPA 58.01.11, "Ground Water Quality Rule," and IDAPA 58.01.02, "Water Quality Standards." If the impact does not comply with IDAPA 58.01.11, "Ground Water Quality Rule," and IDAPA 58.01.02, "Water Quality Standards," the owner of the lagoon must follow one (1) of the steps set out in Subsections 493.04.a. through 493.04.c. (5-8-09)

05. Location. (3-30-07)

a. Wastewater treatment lagoons shall be placed a minimum of two hundred (200) feet from residential property lines. In all cases, the design location shall consider odors, nuisances, etc. This distance is to the toe of the exterior slope of the dike or to the top of the cut for a lagoon placed into a hillside. More restrictive planning and zoning or other local requirements shall apply. (3-30-07)

b. Ground Water Separation. A minimum separation of two (2) feet between the bottom of the pond and the maximum ground water elevation shall be maintained. (3-30-07)

c. Bedrock Separation. A minimum separation of two (2) feet between the pond bottom and any bedrock formation shall be maintained. (3-30-07)

06. Basis of Design. (3-30-07)

a. Design variables such as climatic conditions, odor, pond depth, multiple units, detention time, and additional treatment units must be considered with respect to applicable standards for BOD₅, total suspended solids (TSS), fecal coliform, dissolved oxygen (DO), pH, and other effluent requirements and limits. (3-30-07)

b. The preliminary engineering report shall include all design criteria for the development of the pond design. (5-8-09)

c. The reaction rate coefficient for domestic wastewater which includes some industrial wastes, other wastes, and partially treated wastewater must be determined experimentally for various conditions which might be encountered in the lagoons or actual data from lagoons in similar climates. Conversion of the reaction rate coefficient at other temperatures shall be made based on experimental data. (3-30-07)

d. Oxygen requirements generally will depend on the design average BOD₅ loading, the degree of treatment, and the concentration of suspended solids to be maintained. If needed, aeration equipment shall be capable of maintaining a minimum dissolved oxygen level of two (2) mg/L in the ponds at all times. Suitable protection from weather shall be provided for electrical controls. Aerated cells shall be followed by a polishing cell with a detention time of a minimum of twenty-four (24) hours. (3-30-07)

- e. See Subsection 490.02 for details on aeration equipment. (3-30-07)
- 07. Industrial Wastes as a Part of the Municipal Wastewater.** (3-30-07)
 - a. Consideration shall be given to the type and effects of industrial wastes on the treatment process. (3-30-07)
 - b. Industrial wastes shall not be discharged to ponds without assessment of the effects such substances may have upon the treatment process or discharge requirements in accordance with state and federal laws. (3-30-07)
- 08. Number of Cells Required.** (3-30-07)
 - a. A wastewater treatment pond system shall consist of a minimum of three (3) cells designed to facilitate both series and parallel operations. Two (2) cell systems may be utilized in very small installations of less than fifty thousand (50,000) gallons per day. (3-30-07)
 - b. All systems shall be designed with piping flexibility to permit isolation of any cell without affecting the transfer and discharge capabilities of the total system. (3-30-07)
- 09. Pond Construction Details.** (3-30-07)
 - a. Embankments and Dikes. (3-30-07)
 - i. Material. Dikes shall be constructed of relatively impervious soil and compacted to at least ninety-five (95) percent Standard Proctor Density to form a stable structure. Vegetation and other unsuitable materials shall be removed from the area where the embankment is to be placed. (3-30-07)
 - ii. Top Width. The minimum dike width shall be ten (10) feet to permit access for maintenance vehicles. (3-30-07)
 - iii. Maximum Slopes. Inner and outer dike slopes shall not be steeper than one (1) vertical to three (3) horizontal (1:3). (3-30-07)
 - iv. Minimum Slopes. Inner slopes should not be flatter than one (1) vertical to four (4) horizontal (1:4). Flatter slopes can be specified for larger installations because of wave action but have the disadvantage of added shallow areas being conducive to emergent vegetation. Outer slopes shall be sufficient to prevent surface runoff from entering the ponds. (3-30-07)
 - v. Freeboard. Minimum freeboard shall be three (3) feet, except that for small systems of less than fifty thousand (50,000) gallons per day, two (2) feet may be acceptable. (3-30-07)
 - vi. Design Depth. The minimum operating depth shall be sufficient to prevent growth of aquatic plants and damage to the dikes, bottom, control structures, aeration equipment, and other appurtenances. In no case shall pond depths be less than two (2) feet. (3-30-07)
 - b. Pond Bottom. (3-30-07)
 - i. Soil. Soil used in constructing the pond bottom (not including the seal) and dike cores shall be relatively incompressible and tight and compacted to at least ninety-five (95) percent Standard Proctor Density. (3-30-07)
 - ii. Seal. Ponds shall be sealed such that seepage loss through the seal complies with Subsection 493.03. Results of a testing program which substantiates the adequacy of the proposed seal must be incorporated into or accompany the preliminary engineering report. (5-8-09)
 - c. Miscellaneous. (3-30-07)

i. Fencing. The pond area shall be enclosed with an adequate fence to prevent entering of livestock and discourage trespassing. This requirement does not apply to pond areas which store or impound Class A municipal reclaimed effluent. (5-8-09)

ii. Access. An all-weather access road shall be provided to the pond site to allow year-round maintenance of the facility. (3-30-07)

iii. Warning Signs. Appropriate permanent signs shall be provided along the fence around the pond to designate the nature of the facility and advise against trespassing. At least one (1) sign shall be provided on each side of the site and one (1) for every five hundred (500) feet of its perimeter. (3-30-07)

iv. Flow Measurement. Flow measurement requirements are provided in Subsection 450.06.e. Effective weather protection shall be provided for the recording equipment. (3-30-07)

v. Ground Water Monitoring. A ground water monitoring plan shall be submitted to the Department for review and approval as a part of the preliminary engineering report. An approved system of wells or lysimeters shall be required around the perimeter of the pond site to facilitate ground water monitoring. (5-8-09)

10. Closure. The owner shall notify the Department at least six (6) months prior to permanently removing any wastewater lagoon facility from service, including any treatment or storage pond. Prior to commencing closure activities, the facility shall: (3-30-07)

a. Participate in a pre-closure on-site meeting with the Department; (3-30-07)

b. Develop a site closure plan that identifies specific closure, site characterization, or cleanup tasks with scheduled task completion dates in accordance with agreements made at the pre-site closure meeting; and (3-30-07)

c. Submit the completed site closure plan to the Department for review and approval within forty-five (45) days of the pre-site closure meeting. The facility must complete the Department approved site closure plan. (3-30-07)

494. -- 499. (RESERVED).

500. FACILITY AND DESIGN STANDARDS FOR MUNICIPAL WASTEWATER TREATMENT OR DISPOSAL FACILITIES - DISINFECTION.

01. General. Disinfection of the effluent shall be provided as necessary to meet applicable standards. The design of new municipal wastewater treatment facilities, or municipal wastewater treatment facilities undergoing material modifications, shall consider meeting both the bacterial standards and the disinfectant residual limit in the effluent. The disinfection process shall be selected after due consideration of waste characteristics, type of treatment process provided prior to disinfection, waste flow rates, pH of waste, disinfectant demand rates, current technology application, cost of equipment and chemicals, power cost, and maintenance requirements as determined in the preliminary engineering report. Where a disinfection process other than chlorination, ultraviolet disinfection, or ozone is proposed, supporting data from pilot plant installations or similar full scale installations shall be required as a basis for the design of the system. (5-8-09)

02. Determining the Necessity For Disinfection of Sewage Wastewater Treatment Plant Effluent. (3-30-07)

a. Disinfection of municipal wastewater treatment facility effluent shall be required when: (3-30-07)

i. Required by an NPDES permit; or (3-30-07)

ii. The effluent is discharged to a land application/reuse facility and is required to meet the disinfection requirements found in IDAPA 58.01.17, "Rules for the Reclamation and Reuse of Municipal and Industrial Wastewater." (3-30-07)